

**2004 Annual Water Quality Report
& Leachate Control System Performance
Evaluation - Anderson Excavating
Council Bluffs C&D Landfill
Council Bluffs, IA
Permit No. 78-SDP-04-89P
Project No. ANDEX 04001
November 29, 2004**

*Igd
LCSPE
Award*
**1801 Industrial Circle, West Des Moines, Iowa 50265
(515) 256-8814 Fax (515) 256-0152**

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BARKER LEMAR
ENGINEERING CONSULTANTS

November 29, 2004

Ms. Amie Hart
Iowa Department of Natural Resources
900 E. Grand Avenue
Wallace State Office Building
Des Moines, IA 50319

**RE: 2004 Annual Water Quality Report and
Leachate Control System Performance Evaluation
Council Bluffs C&D Landfill
Permit No. 78-SDP-04-89P
Project No. ANDEX 04001**

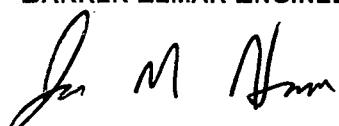
Dear Amie:

1801 INDUSTRIAL CIRCLE
WEST DES MOINES, IOWA
515.256.8814
15.256.0152 (F)
www.barkerlemar.com
DES MOINES
MAD CITIES
ST.LOUIS

BARKER LEMAR ENGINEERING CONSULTANTS (BARKER LEMAR), on behalf of the Anderson Excavating Company, has completed the water quality monitoring and assessment for the above-referenced site for the year 2004. Our services were performed in general accordance with Iowa Administrative Code (IAC) Section 113.26(4) and the current requirements for implementation of the Hydrologic Monitoring System Plan (HMS). Please find enclosed a copy of the 2004 Annual Water Quality Report and Leachate Control System Performance Evaluation (LCSPE) for the above-referenced site.

If you have any questions regarding this report, please contact us at 515/256-8814.

Sincerely,
BARKER LEMAR ENGINEERING CONSULTANTS



Joseph M. Herrick
Engineering Technician



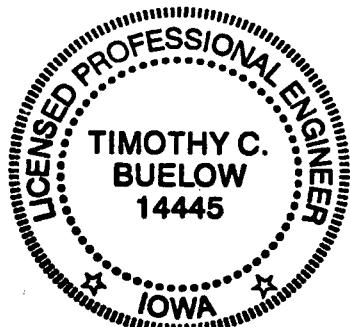
Christine L. Collier, E.I.
Senior Project Manager

copy: Addressee
Mr. Virgil Anderson - Anderson Excavating Company
IDNR Field Office #4
File

BARKER LEMAR

ENGINEERING CONSULTANTS

2004 ANNUAL WATER QUALITY REPORT &
LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION
ANDERSON EXCAVATING
COUNCIL BLUFFS C&D LANDFILL
Council Bluffs, Iowa
Permit No. 78-SDP-04-89P
Project No. ANDEX 04001
NOVEMBER 29, 2004



I hereby certify that this engineering document was prepared by me or under my direct personal supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

 11-29-04
Timothy C. Buelow, P.E. Date

My license renewal date is December 31, 2005.

Pages or sheets covered by this seal: All

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BARKER LEMAR

ENGINEERING CONSULTANTS

2004 ANNUAL WATER QUALITY REPORT &
LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION
ANDERSON EXCAVATING
COUNCIL BLUFFS C&D LANDFILL
Council Bluffs, Iowa
Permit No. 78-SDP-04-89P
Project No. ANDEX 04001
NOVEMBER 29, 2004

1.0 INTRODUCTION

BARKER LEMAR ENGINEERING CONSULTANTS (BARKER LEMAR), on behalf of our client, Anderson Excavating, completed groundwater sampling at the above-referenced site. The Council Bluffs C & D Landfill has been a permitted facility since 1989. The site has actively been receiving waste since this time. Sampling was performed in general accordance with Iowa Administrative Code (IAC) Section 113.26(4) and the provisions identified in the landfill permit. This report addresses water quality data collected during the 2004 sampling events and discusses the following issues:

- Observations made during the collection of groundwater samples;
- Results of the physical parameters measured during sample collection;
- The statistical treatment and evaluation of the chemical data;
- Changes or maintenance needed in the monitoring system; and
- Provides a summary listing of analytical data, statistical computation results, graphs of statistical exceptions, and a digital copy of the data.

2.0 FIELD ACTIVITIES AND PROCEDURES

Groundwater monitoring wells were developed and sampled by **BARKER LEMAR** personnel on April 15, 2004 and October 4, 2004. These activities represent the regular spring and fall semi-annual sampling events for 2004. Water samples from six (6) groundwater monitoring wells were collected during these events. Sampling forms and analytical reports for the April sampling event were submitted previously. Sampling forms for the October sampling event are included in Appendix A.

The general groundwater field measurement and sampling procedures used are outlined below:

- Static water levels and total well depths were measured using an electronic water level indicator.
- Wells were purged of approximately three well volumes or until dry using dedicated Waterra® development/sampling pumps and/or disposable bailers. Groundwater elevations were measured before and after well development.
- Field measurements of pH, temperature, and specific conductance were collected during development to be used as indicators of well conditions prior to sample collection.
- Groundwater samples were collected by using the Waterra® pump and/or disposable bailer and by transferring the samples into laboratory-prepared containers. Bailers were used to facilitate collection of groundwater samples from the very deep monitoring wells. The samples collected for dissolved metals analysis were field filtered using 0.45 micron filters.
- Samples were submitted for laboratory analysis under chain-of-custody procedures. Analysis was performed as indicated in the Hydrologic Monitoring System Plan (HMSP) and IAC 567 Sections 113.26(4)(e) and (f) and the provisions identified in the landfill permit.

3.0 MONITORING SYSTEM

The groundwater monitoring system in-place at the site is comprised of six monitoring wells (MW-2, MW-3, MW-4, MW-9, MW-10, and MW-11). Figure 1 shows the location of the monitoring system points.

3.1 GROUNDWATER MONITORING SYSTEM

Two groundwater regimes (the upper aquifer or water table aquifer and the lower aquifer or basal sand aquifer) are monitored by the corresponding monitoring wells, as shown in Table 1.

TABLE 1
MONITORING WELL PLACEMENT

REGIME	MONITORING WELLS
Upper or Surficial Aquifer (Aquifer 1)	Upgradient: MW-3 Downgradient: MW-2, MW-9, MW-11
Lower Aquifer (Aquifer 2)	Upgradient: MW-4 Downgradient: MW-10

4.0 MONITORING SYSTEM PERFORMANCE EVALUATION

The hydrologic monitoring system was re-evaluated to determine the reliability of the performance of the monitoring well points based on the following tasks.

- The high and low groundwater levels were compared to the well depth/screened interval.
- Water level conditions in the monitoring wells were reviewed to evaluate possible changes in the hydrologic setting/flow paths due to landfilling activities.
- Well depths were measured to evaluate integrity and siltation.
- A visual inspection of well integrity was performed during the sampling event.

4.1 WATER LEVEL MEASUREMENTS

The results of the water level measurements and well depth measurements are shown in Table 2 (Summary of Groundwater Levels and Well Performance) on the next page. The data indicate groundwater elevations ranged from 1059.87 to 1082.89 feet above sea level (ASL) when both sampling events are compared. Groundwater levels were generally observed to decrease from the spring sampling event to the fall event, except from MW-2 and MW-4. The fluctuations ranged from an increase of 1.85 feet in MW-2 to a decrease of 6.15 feet in MW-9.

Water levels were observed to be within the screened interval in monitoring wells MW-2, MW-3, MW-9, and MW-11 during at least one of the two sampling events during 2004. The remaining wells were observed to have water levels above the reported top of screen elevations.

Water levels in the monitoring wells have been sufficient to yield ground water samples from the six monitoring wells during both the April and October sampling events. Sampling was completed with disposable bailers, with the exception of MW-2, where the use of a Waterra pump was necessary.

4.2 GROUNDWATER FLOW

Limited groundwater contours were determined for the upper aquifer, or water table, using water elevation data collected by BARKER LEMAR personnel on October 4, 2004. These contours are presented in Figure 1. The general flow direction was to the southeast with a gradient of 0.018 ft/ft. Potentiometric surface elevations are shown in Figure 2. Groundwater contours were indeterminate for the potentiometric surface and limited for the upper aquifer due to well abandonments in the northeast portion of the site. A review of historical water level data shows little change throughout the years. In 2005, groundwater levels from MW-1, MW-4, MW-8, and MW-10 will be utilized to develop groundwater flow contours for the lower aquifer.

4.3 WELL SILTATION

The monitoring well depths measured during the last two sampling events were generally within 2.1 feet of the installed depth for the wells with data available. Based on the ability of the dedicated purging system to remove accumulated sediment, it appears unlikely the siltation will adversely impact the groundwater monitoring points at this site.

4.4 SAMPLING POINT OBSERVATIONS

The protective caps were broken on monitoring wells MW-2, MW-3, and MW-4. These protective caps will be replaced in 2005. In general, other problems regarding the integrity of the monitoring wells or sampling points were not noted.

5.0 DATA EVALUATION METHODS

The statistical evaluation of the chemical data was completed in accordance with IAC 567 Section 113.26(6).

5.1 WELL GROUPING

The groundwater regimes discussed in Section 3.1 were evaluated separately. An upgradient monitoring point has been selected from each group for statistical comparison. The selection of upgradient points has been based on the hydrogeological assessments performed by others, the measured chemical and physical data, and guidance provided by the IDNR.

5.2 CONTROL LIMITS

Once the groupings were completed, the mean, standard deviation, and control limits were calculated for each of the chemical parameters in the upgradient monitoring point. The control limit represents the limit at which a statistical exceedance beyond the background concentrations has occurred. For the purpose of this evaluation, the control limits are defined as the mean of the concentrations for the upgradient monitoring point plus/minus two times the standard deviation for each parameter. The lower control limit is only used for evaluation of pH levels.

5.3 METHOD DETECTION LIMITS

Many of the parameters were observed at concentrations less than the method detection limits (MDLs). The mean, standard deviation, and control limit are computed by utilizing the reporting limit value in the computations (i.e., <0.05 becomes 0.05). In situations where the upgradient monitoring point concentrations were below the MDLs, the standard deviation and control limits were not calculated. It should be noted that in some cases in which control limits were not calculated for the aforementioned reason, the measured downgradient concentration exceeded the upgradient mean.

5.4 REGULATORY ACTION LIMITS

In addition to evaluating the concentration in comparison to upgradient control limits, the concentrations are also compared to current United States Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs), Negligible Risk Levels (NRLs) and Health Advisory Levels (HALs). IDNR guidance documents define the "action level" for groundwater as the following:

"As defined by 567 - 133.2 (455B, 455E), action level means the HAL, if one exists. If there is no HAL, then the NRL, if one exists. If there is no HAL or NRL, then the MCL. If there is no HAL, NRL, or MCL, an action level may be established by the department based on current technical literature and recommended guidelines of the USEPA and recognized experts, on a case-by-case basis."

During the October 2004 sampling event the arsenic concentration in upgradient monitoring well MW-3 exceeded the MCL of 0.010 mg/L.

6.0 EVALUATION OF WATER QUALITY PARAMETERS

The analytical results of the upgradient and downgradient monitoring wells are presented in Appendix B (Summary of Groundwater Chemistry). The analytical data reports for October are included in Appendix C. Parameters were graphed in relation to the current upgradient mean and standard deviation for each group. Results that exceeded the current upgradient control limits are presented in the Exceedance Tables in Appendix D. The graphs depicting the changes of each parameter in each downgradient monitoring point are included in Appendix E. Note that some graphs depict values that exceed the upper control limit and are not included in the summary of exceedances table. These values are not reported as exceedances due to the upper control limit being less than the detection level of that parameter's test method.

6.1 MONITORING WELL SUMMARY

No statistical exceedences were measured for MW-2 in 2004. Analytical results for this well are available beginning in February 1997. The total phenols, total organic halogens (TOH), specific conductance, pH, ammonia nitrogen, dissolved iron, chloride, chemical oxygen demand (COD), and dissolved arsenic concentrations were within the ranges previously observed. A new concentration maximum was observed for chloride in the October sampling event. COD and dissolved iron concentrations were below the Method Detection Limits (MDLs) in sampling events, ammonia nitrogen and chloride concentrations were below the MDLs in the April sampling event, and total phenols and TOH concentrations were below the MDLs in the October sampling event.

No trends in concentrations were noted in the analytes.

No statistical exceedences were measured for MW-9 in 2004. Analytical results for this well are available beginning in November 1996. The total phenols, TOH, specific conductance, pH, ammonia nitrogen, dissolved iron, and COD concentrations were within the ranges previously observed. A new concentration maximum was observed for chloride in the October sampling event. Ammonia nitrogen and dissolved iron

concentrations were below the MDLs in both sampling events and total phenols, TOH, and COD concentrations were below the MDLs in the October sampling event.

No trends in concentrations were noted in the analytes.

2004 statistical exceedences were measured in MW-10 for chloride in both sampling events. Analytical results for this well are available beginning in November 1996. The total phenols, TOH, pH, specific conductance, ammonia nitrogen, and dissolved iron concentrations were within the ranges previously observed. New concentration maximums were observed for chloride and specific conductance in the October sampling events. Ammonia nitrogen and dissolved iron concentrations were below the MDLs in both sampling events and total phenols, TOH and COD concentrations were below the MDLs in the October sampling event.

A generally increasing chloride concentration trend was noted in data beginning in October 1997. No trends in concentrations were noted in the remaining analytes.

A 2004 statistical exceedence was measured in MW-11 for specific conductance in the October sampling event. Analytical results for this well are available beginning in November 1996. The total phenols, TOH, pH, ammonia nitrogen, dissolved iron, and COD concentrations were within the ranges previously observed. New concentration maximums were observed for chloride and specific conductance in the October sampling events. Ammonia nitrogen, COD, and dissolved iron concentrations were below the MDLs in both sampling events and total phenols, TOH and COD concentrations were below the MDLs in the October sampling event.

No trends in concentrations were noted in the analytes.

7.0 SUMMARY AND RECOMMENDATIONS

A summary of the exceedances computed for the downgradient monitoring wells is shown in Table 3.

TABLE 3

SUMMARY OF EXCEEDANCES

Parameter	MW-10	MW-11
Chloride	4,10	
Specific Conductance		10

4 = April 2004 Sampling Event

10 = October 2004 Sampling Event

Based on these results, BARKER LEMAR recommends continued routine semi-annual sampling and annual water sampling for the parameters listed in IAC Chapter 113.26(4)(e) and (f) and as stated in the current operating permit and amendments. We also recommend continued sampling of arsenic at substituted upgradient well MW-3 to monitor existing conditions and the recent action level exceedences. Discontinuing semi-annual sampling for arsenic in monitoring well MW-2 is recommended as measured concentrations have consistently been below the MCL of 0.010 mg/L.

8.0 LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION

The leachate collection system at the Council Bluffs C&D Landfill consists of three perforated collection pipes that drain into a main header (Figure 3). This empties into a 12,000 gallon storage tank. The storage tank will be replaced by a storage lagoon, when needed. In addition, a perforated pipe was added at the top of the compacted trench of the main header line. This will provide an extra collection pipe along the east toe of the current fill area. The leachate that accumulates in the storage tank is pumped from the tank and then recirculated within the current lined waste area. The Council Bluffs Landfill Leachate Tank Readings showing percent of tank full for 2004 are shown in Appendix F.

9.0 GENERAL COMMENTS

The analysis and opinions expressed in this report are based upon data obtained from the samples collected at the indicated locations and from any other information discussed in this report. This report does not reflect any variations in subsurface stratigraphy, hydrogeology, or

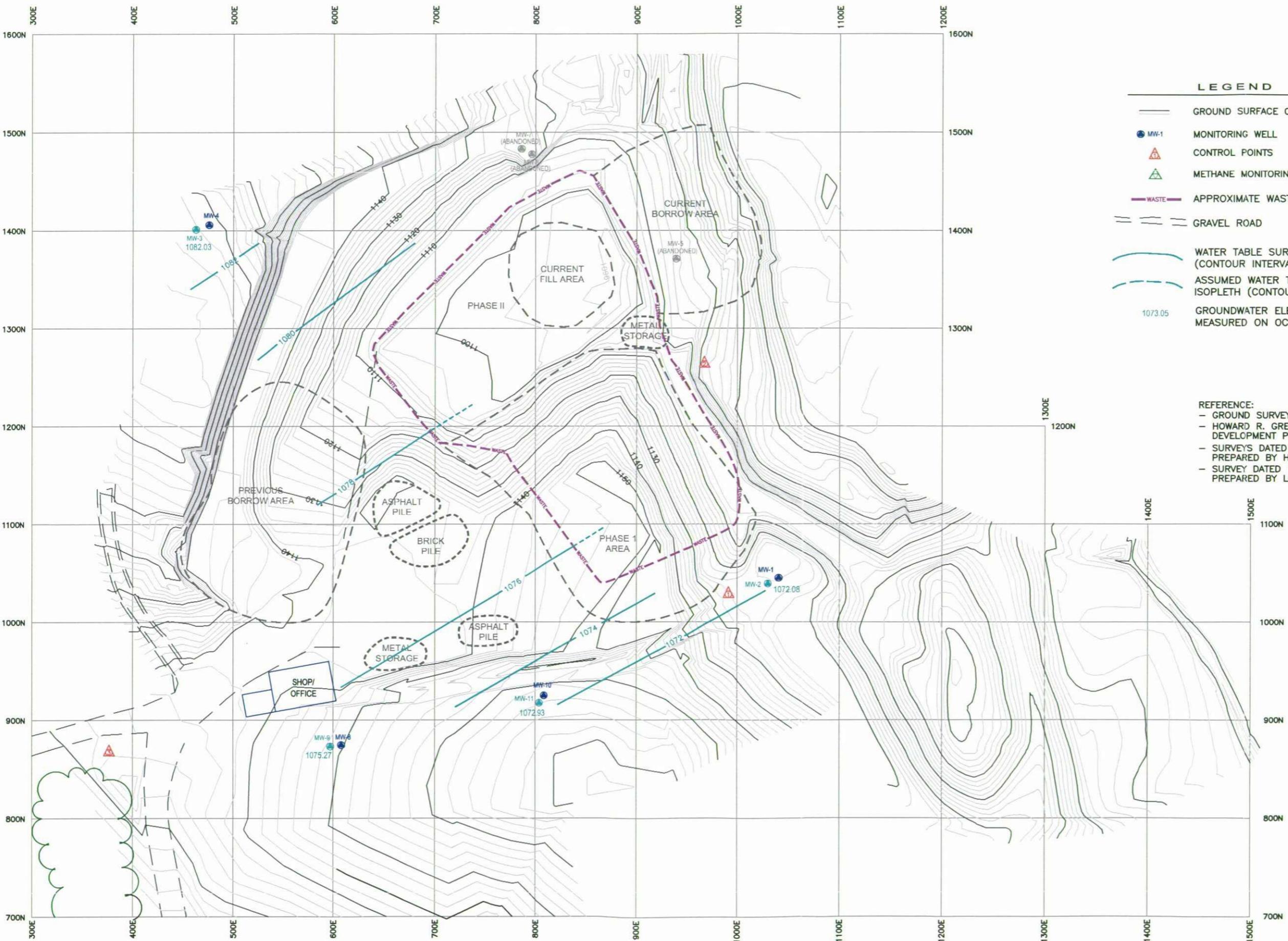
chemical concentrations that may occur between sampling locations or across the site. Actual subsurface conditions may vary and may not become evident without further exploration.

BARKER LEMAR has prepared this report for the exclusive use of our client for the specific application to the project discussed. No warranty is expressly stated or implied in this report with regard to the conditions of substrate and groundwater below the surface of the facility. **BARKER LEMAR** has relied upon information furnished by others as noted in the report, and **BARKER LEMAR** accepts no responsibility for any deficiency, misstatements, or inaccuracy in this report as a result of misstatements, omissions, misrepresentations, fraudulent, or inaccurate information or data provided by others.

10.0 REFERENCES

1. Iowa Department of Natural Resources. *Annual Report 1997, Registry of Hazardous Waste or Hazardous Substance Disposal Sites and Hazardous Waste Remedial Fund.* Dated January 1, 1998.
2. Howard R. Green Company, Consulting Engineers. *Hydrogeological Investigation Report.* Dated June 1995.
3. Howard R. Green Company, Consulting Engineers. *Hydrologic Monitoring System Plan.* Dated June 1995.
4. Barker Environmental Services, Inc. *1997 Annual Water Quality Report, Anderson Excavating Company C&D Landfill.* Dated December 3, 1997.
5. Barker, Lemar & Associates, Inc. *1998 Annual Water Quality Report, Anderson Excavating Company C&D Landfill.* Dated November 25, 1998.
6. Barker, Lemar & Associates, Inc. *1999 Annual Water Quality Report, Anderson Excavating Company C&D Landfill.* Dated November 29, 1999.
7. Barker, Lemar & Associates, Inc. *2000 Annual Water Quality Report, Anderson Excavating Company C&D Landfill.* Dated November 28, 2000.
8. **BARKER LEMAR ENGINEERING CONSULTANTS.** *2001 Annual Water Quality Report and Leachate Control System Performance Report, Anderson Excavating Company C&D Landfill.* Dated November 28, 2001.
9. **BARKER LEMAR ENGINEERING CONSULTANTS.** *2002 Annual Water Quality Report and Leachate Control System Performance Report, Anderson Excavating Company C&D Landfill.* Dated November 18, 2002.
10. **BARKER LEMAR ENGINEERING CONSULTANTS.** *2003 Annual Water Quality Report and Leachate Control System Performance Report, Anderson Excavating Company C&D Landfill.* Dated November 26, 2003.

FIGURES

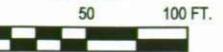


AQUIFER 1
OCTOBER 4, 2004

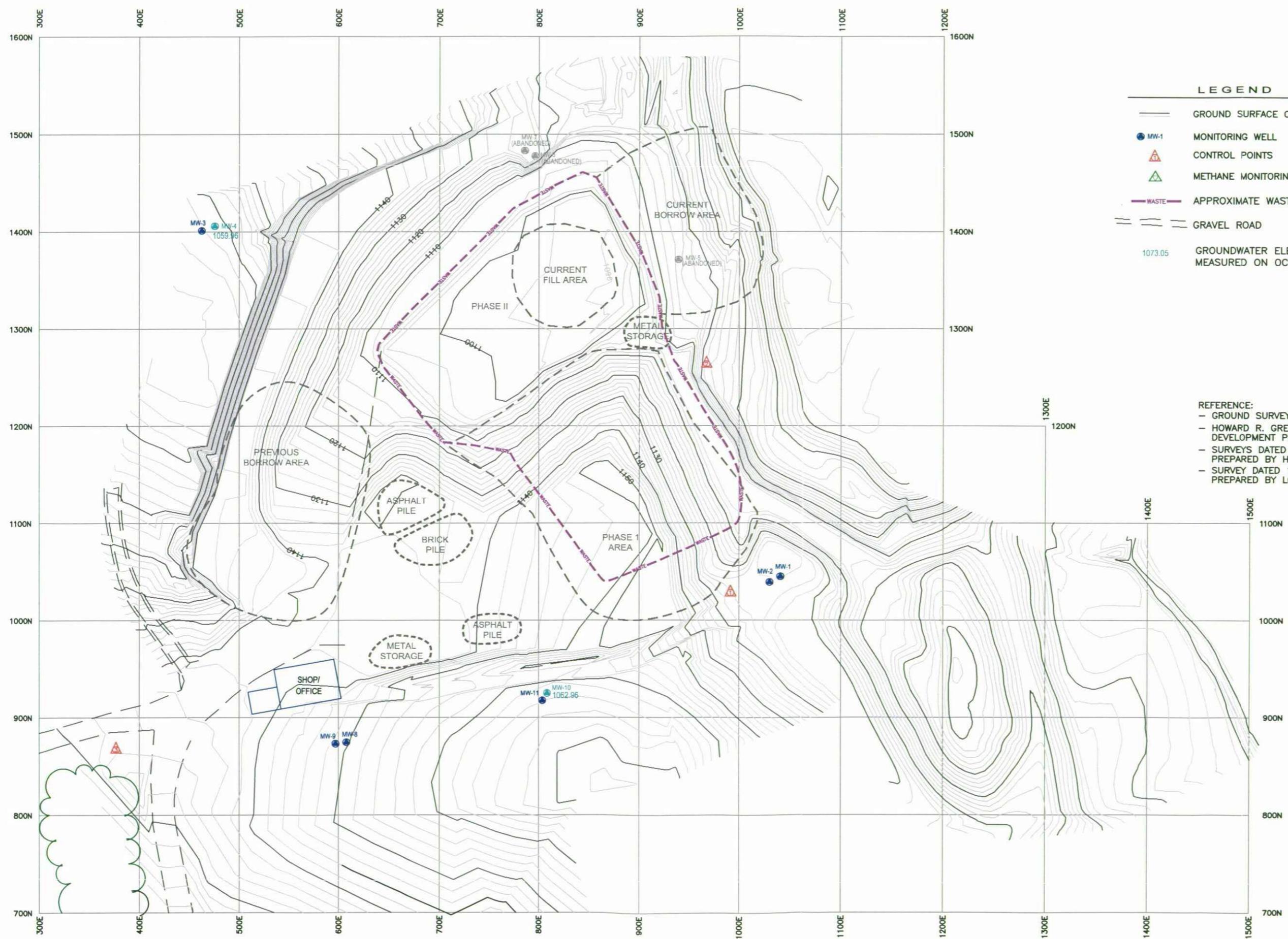
FIGURE
1

COUNCIL BLUFFS C & D LANDFILL
COUNCIL BLUFFS, IOWA
PROJECT NO. ANDEX 04001
DRAWING DATE: NOVEMBER 2004

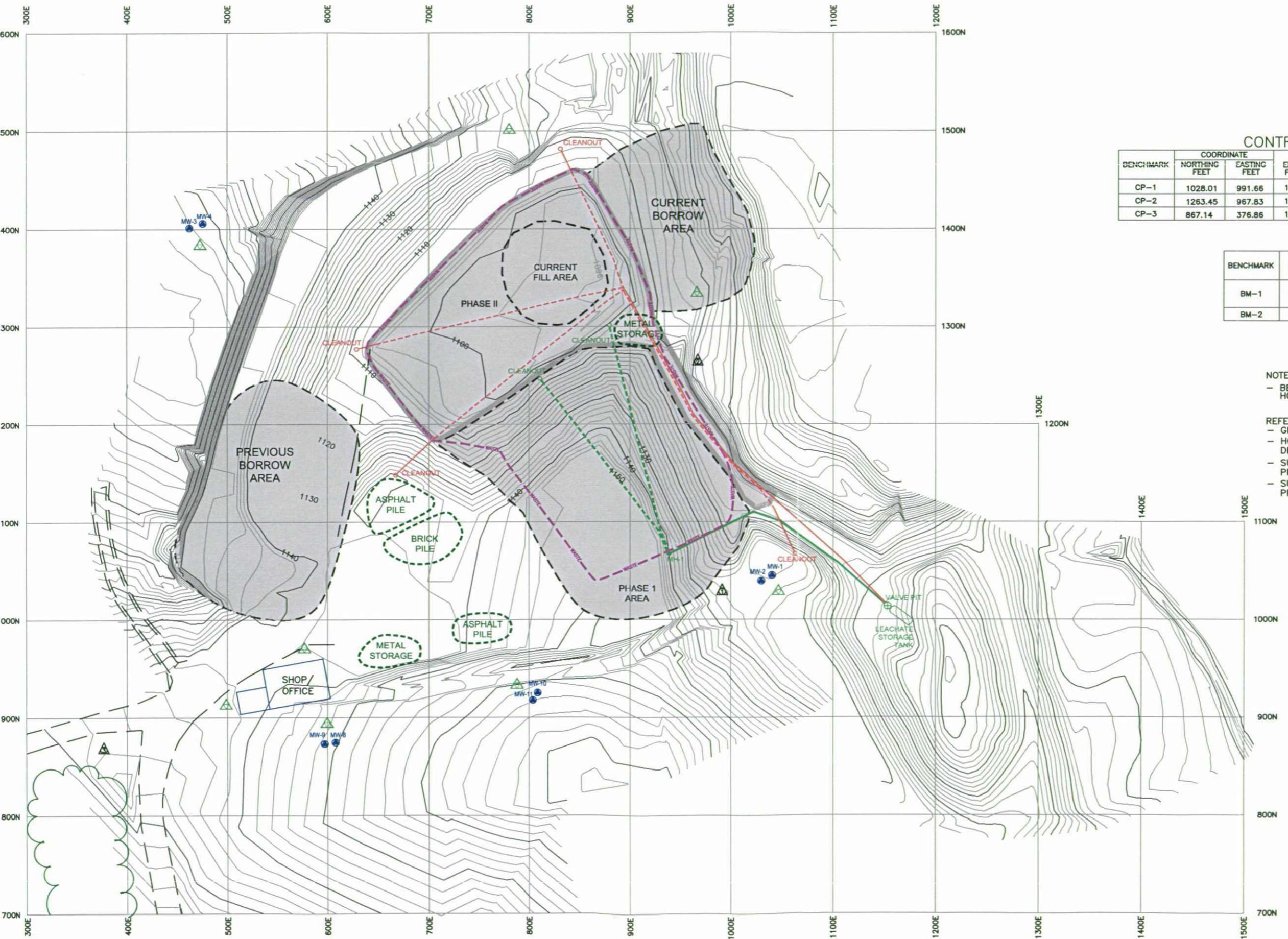
SCALE



Copyright © 2004 - Barker Lemar Engineering Consultants


AQUIFER 2
OCTOBER 4, 2004
FIGURE**2**

2



CONTROL POINTS

BENCHMARK	COORDINATE			DESCRIPTION
	NORTHING FEET	EASTING FEET	ELEVATION FEET ASL	
CP-1	1028.01	991.66	1126.21	PROPERTY CORNER
CP-2	1263.45	967.83	1123.22	SURVEY HUB
CP-3	867.14	376.86	1131.63	3/4" REBAR SET

BENCHMARKS

BENCHMARK	ELEVATION FEET ASL	DESCRIPTION
BM-1	1071.74	TOP BOLT - CENTER OF BOX CULVERT NORTH OF HIGHWAY 6, EAST OF CHAMPION AUTO PARTS, NORTHEAST CORNER OF MCKENZIE AND 6TH
BM-2	1127.94	EST. RAILROAD SPIKE IN TREE

COUNCIL BLUFFS C & D LANDFILL
COUNCIL BLUFFS, IOWA
PROJECT NO. ANDEX 04001
DRAWING DATE: NOVEMBER 2004

2004 ANNUAL SERVICES FACILITY MAP

FIGURE
3

APPENDIX A
SAMPLING FORMS

FORM FOR GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT

Site Name	Anderson Excavating Co.	Permit No.	78-SDP-04-89P
MW/Piezometer No.	MW-2	Upgradient	
		Downgradient	X

Name of Person Sampling	Joe Herrick
-------------------------	-------------

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	No	Standing Water/Litter?	No
If NO, Explain			

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Top of Casing Elevation	1128.28	feet	Ground Elevation (ft.)	1126.86
Drilled Well Depth (ft.)	62.4	feet	Casing Dia. (in.)	4.0
Measured Well Depth (ft.)	60.8	feet		

Equipment Used	Heron
----------------	-------

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date	Time	Depth to Groundwater (ft)	Groundwater Elevation
Before Purging	10/4/2004	11:05 AM	56.20	1072.08
After Purging			Dry	NA
Before Sampling			57.61	1070.67

C. WELL PURGING*

Quantity of Water Removed from Well (gallons)	2
No. of Well Volumes (based on current water level)	0.7
Was well pumped/bailed dry?	Yes

Equipment Used:

Bailer Type	Not Used	Dedicated Bailer?	No
Pump Type	Waterra	Dedicated Pump?	Yes

If not dedicated, method of cleaning

D. FIELD MEASUREMENTS'

Weather Conditions	Sunny, calm, 59 degrees Fahrenheit
--------------------	------------------------------------

Field Measurements (after stabilization):

Temperature	16.4	Units	Celsius
Equipment Used	Hanna		
pH	7.41	Units	Standard Units
Equipment Used	Hanna		
Spec. Conductance	1338	Units	uS/cm.
Equipment Used	Hanna		

COMMENTS

IDNR Form 542-1322

* - Omit if only measuring groundwater elevations.

FORM FOR GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT

Site Name Anderson Excavating Co. Permit No. 78-SDP-04-89P
 MW/Piezometer No. MW-3 Upgradient X
 Downgradient _____

Name of Person Sampling Joe Herrick

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Capped? No Standing Water/Litter? No
 If NO, Explain _____

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Top of Casing Elevation	<u>1196.12</u> feet	Ground Elevation (ft.)	<u>1195.12</u>
Drilled Well Depth (ft.)	<u>119.0</u> feet	Casing Dia. (in.)	<u>4.0</u>
Measured Well Depth (ft.)	<u>118.8</u> feet		

Equipment Used Heron

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date	Time	Depth to Groundwater (ft)	Groundwater Elevation
Before Purging	<u>10/4/2004</u>	<u>11:25 AM</u>	<u>114.09</u>	<u>1082.03</u>
After Purging			Dry	NA
Before Sampling			<u>113.79</u>	<u>1082.33</u>

C. WELL PURGING*

Quantity of Water Removed from Well (gallons) 2
 No. of Well Volumes (based on current water level) 0.7
 Was well pumped/bailed dry? Yes

Equipment Used:
 Bailer Type Bailer Dedicated Bailer? No
 Pump Type Not Used Dedicated Pump? No

If not dedicated, method of cleaning disposable bailer

D. FIELD MEASUREMENTS

Weather Conditions Sunny, calm, 59 degrees Fahrenheit

Field Measurements (after stabilization):

Temperature	<u>14.8</u>	Units	<u>Celsius</u>
Equipment Used	<u>Hanna</u>		
pH	<u>7.42</u>	Units	<u>Standard Units</u>
Equipment Used	<u>Hanna</u>		
Spec. Conductance	<u>815</u>	Units	<u>uS/cm.</u>
Equipment Used	<u>Hanna</u>		

COMMENTS

IDNR Form 542-1322

* - Omit if only measuring groundwater elevations.

FORM FOR GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT

Site Name	<u>Anderson Excavating Co.</u>	Permit No.	<u>78-SDP-04-89P</u>
MW/Piezometer No.	<u>MW-4</u>	Upgradient	<u>X</u>
		Downgradient	

Name of Person Sampling Joe Herrick

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	<u>No</u>	Standing Water/Litter?	<u>No</u>
If NO, Explain	<hr/>		

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Top of Casing Elevation	<u>1195.65</u> feet	Ground Elevation (ft.)	<u>1194.01</u>
Drilled Well Depth (ft.)	<u>199.6</u> feet	Casing Dia. (in.)	<u>4.0</u>
Measured Well Depth (ft.)	<u>150 +</u> feet		

Equipment Used Heron

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date	Time	Depth to Groundwater (ft)	Groundwater Elevation
Before Purging	<u>10/4/2004</u>	<u>11:50 AM</u>	<u>135.69</u>	<u>1059.96</u>
After Purging	<u></u>	<u></u>	<u>145.00</u>	<u>1050.65</u>
Before Sampling	<u></u>	<u></u>	<u>145.00</u>	<u>1050.65</u>

C. WELL PURGING*

Quantity of Water Removed from Well (gallons)	<u>13</u>
No. of Well Volumes (based on current water level)	<u>0.3</u>
Was well pumped/bailed dry?	<u>No</u>

Equipment Used:

Bailer Type	<u>Bailer</u>	Dedicated Bailer?	<u>No</u>
Pump Type	<u>Not Used</u>	Dedicated Pump?	<u>No</u>

If not dedicated, method of cleaning disposable bailer

D. FIELD MEASUREMENTS*

Weather Conditions Sunny, calm, 59 degrees Fahrenheit

Field Measurements (after stabilization):

Temperature	<u>13.2</u>	Units	<u>Celsius</u>
Equipment Used	<u>Hanna</u>		
pH	<u>7.32</u>	Units	<u>Standard Units</u>
Equipment Used	<u>Hanna</u>		
Spec. Conductance	<u>515</u>	Units	<u>uS/cm.</u>
Equipment Used	<u>Hanna</u>		

COMMENTS

* - Omit if only measuring groundwater elevations.

FORM FOR GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT

Site Name	<u>Anderson Excavating Co.</u>	Permit No.	<u>78-SDP-04-89P</u>
MW/Piezometer No.	<u>MW-9</u>	Upgradient	
		Downgradient	<u>X</u>

Name of Person Sampling Joe Herrick

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	<u>Yes</u>	Standing Water/Litter?	<u>No</u>
If NO, Explain	<u> </u>		

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Top of Casing Elevation	<u>1153.87</u>	feet	Ground Elevation (ft.)	<u>1151.22</u>
Drilled Well Depth (ft.)	<u>92.7</u>	feet	Casing Dia. (in.)	<u>2.0</u>
Measured Well Depth (ft.)	<u>93.0</u>	feet		

Equipment Used Heron

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date	Time	Depth to Groundwater (ft)	Groundwater Elevation
Before Purging	<u>10/4/2004</u>	<u>10:00 AM</u>	<u>78.60</u>	<u>1075.27</u>
After Purging			<u>89.26</u>	<u>1064.61</u>
Before Sampling			<u>89.26</u>	<u>1064.61</u>

C. WELL PURGING*

Quantity of Water Removed from Well (gallons)	<u>5</u>
No. of Well Volumes (based on current water level)	<u>2.1</u>
Was well pumped/bailed dry?	<u>No</u>

Equipment Used:

Bailer Type	<u>Bailer</u>	Dedicated Bailer?	<u>No</u>
Pump Type	<u>Not Used</u>	Dedicated Pump?	<u>No</u>

If not dedicated, method of cleaning disposable bailer

D. FIELD MEASUREMENTS*

Weather Conditions Sunny, calm, 59 degrees Fahrenheit

Field Measurements (after stabilization):

Temperature	<u>13.8</u>	Units	<u>Celsius</u>
Equipment Used	<u>Hanna</u>		
pH	<u>7.44</u>	Units	<u>Standard Units</u>
Equipment Used	<u>Hanna</u>		
Spec.Conductance	<u>1271</u>	Units	<u>uS/cm.</u>
Equipment Used	<u>Hanna</u>		

COMMENTS

* - Omit if only measuring groundwater elevations.

FORM FOR GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT

Site Name	Anderson Excavating Co.	Permit No.	78-SDP-04-89P
MW/Piezometer No.	<u>MW-10</u>	Upgradient	
		Downgradient	<u>X</u>
Name of Person Sampling	Joe Herrick		

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	<u>Yes</u>	Standing Water/Litter?	<u>No</u>
If NO, Explain	<hr/>		

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Top of Casing Elevation	<u>1167.89</u>	feet	Ground Elevation (ft.)	<u>1165.44</u>
Drilled Well Depth (ft.)	<u>167.5</u>	feet	Casing Dia. (in.)	<u>2.0</u>
Measured Well Depth (ft.)	<u>150 +</u>	feet		

Equipment Used	Heron		
----------------	-------	--	--

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date	Time	Depth to Groundwater (ft)	Groundwater Elevation
Before Purging	<u>10/4/2004</u>	<u>10:20 AM</u>	<u>104.93</u>	<u>1062.96</u>
After Purging	<u> </u>	<u> </u>	<u>104.93</u>	<u>1062.96</u>
Before Sampling	<u> </u>	<u> </u>	<u>104.93</u>	<u>1062.96</u>

C. WELL PURGING*

Quantity of Water Removed from Well (gallons)	<u>10</u>
No. of Well Volumes (based on current water level)	<u>1.0</u>
Was well pumped/bailed dry?	<u>No</u>

Equipment Used:

Bailer Type	<u>Bailer</u>	Dedicated Bailer?	<u>No</u>
Pump Type	<u>Not Used</u>	Dedicated Pump?	<u>No</u>

If not dedicated, method of cleaning	<u>disposable bailer</u>
--------------------------------------	--------------------------

D. FIELD MEASUREMENTS*

Weather Conditions	<u>Sunny, calm, 59 degrees Fahrenheit</u>		
--------------------	---	--	--

Field Measurements (after stabilization):

Temperature	<u>12.1</u>	Units	<u>Celsius</u>
Equipment Used	<u>Hanna</u>		
pH	<u>7.49</u>	Units	<u>Standard Units</u>
Equipment Used	<u>Hanna</u>		
Spec. Conductance	<u>>4000</u>	Units	<u>uS/cm.</u>
Equipment Used	<u>Hanna</u>		

COMMENTS

IDNR Form 542-1322

* - Omit if only measuring groundwater elevations.

FORM FOR GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT

Site Name	Anderson Excavating Co.	Permit No.	78-SDP-04-89P
MW/Piezometer No.	MW-11	Upgradient	
		Downgradient	X
Name of Person Sampling	Joe Herrick		

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes	Standing Water/Litter?	No
If NO, Explain			

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Top of Casing Elevation	1167.84	feet	Ground Elevation (ft.)	1165.31
Drilled Well Depth (ft.)	102.5	feet	Casing Dia. (in.)	2.0
Measured Well Depth (ft.)	102.5	feet		

Equipment Used	Heron
----------------	-------

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date	Time	Depth to Groundwater (ft)	Groundwater Elevation
Before Purging	10/4/2004	10:45 AM	94.91	1072.93
After Purging			97.77	1070.07
Before Sampling			97.77	1070.07

C. WELL PURGING*

Quantity of Water Removed from Well (gallons)	5
No. of Well Volumes (based on current water level)	4.0
Was well pumped/bailed dry?	No

Equipment Used:			
Bailer Type	Bailer	Dedicated Bailer?	No
Pump Type	Not Used	Dedicated Pump?	No

If not dedicated, method of cleaning	disposable bailer
--------------------------------------	-------------------

D. FIELD MEASUREMENTS*

Weather Conditions	Sunny, calm, 59 degrees Fahrenheit
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Field Measurements (after stabilization):

Temperature	12.1	Units	Celsius
Equipment Used	Hanna		
pH	7.55	Units	Standard Units
Equipment Used	Hanna		
Spec.Conductance	2528	Units	uS/cm.
Equipment Used	Hanna		

COMMENTS

IDNR Form 542-1322

* - Omit if only measuring groundwater elevations.

APPENDIX B
SUMMARY OF GROUNDWATER CHEMISTRY

Summary of Groundwater Chemistry

Council Bluffs Construction and Demolition Landfill - 78-SDP-01-89

Parameter	Date	MW-2	MW-3	MW-4	MW-5	MW-7	MW-9	MW-10	MW-11
		DN1	UP1	UP2	UP1	UP2	DN1	DN2	DN1
Mercury, Dissolved - mg/L MCL - 0.002 mg/L HAL - 0.002 mg/L	11/8/1996	NM	NM	NM	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	2/27/1997	<0.0002	NM	NM	<0.0002	0.0007	0.0007	0.0008	0.0008
	5/12/1997	NM	NM	NM	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	7/23/1997	NM	NM	NM	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	4/7/1998	<0.0002	NM	NM	NM	NM	NM	NM	NM
	10/16/1998	<0.0002	NM	NM	NM	NM	NM	NM	NM
	4/16/1999	<0.0002	NM	NM	NM	NM	NM	NM	NM
	10/7/1999	<0.0002	NM	NM	NM	NM	NM	NM	NM
	11/8/1996	NM	NM	NM	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
	2/27/1997	<0.0200	NM	NM	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Zinc, Dissolved - mg/L HAL - 2 mg/L	5/12/1997	NM	NM	NM	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
	7/23/1997	NM	NM	NM	0.0710	<0.0200	<0.0200	<0.0200	<0.0200
	4/7/1998	<0.0200	NM	NM	NM	NM	NM	NM	NM
	10/16/1998	<0.0200	NM	NM	NM	NM	NM	NM	NM
	4/16/1999	<0.0200	NM	NM	NM	NM	NM	NM	NM
	10/7/1999	0.1450	NM	NM	NM	NM	NM	NM	NM

Notes:

NM - Indicates parameter was not measured

< - Indicates less than the Method Detection Limit (MDL)

ug/L - Indicates micrograms per liter, equivalent to parts per billion at low concentrations

mg/L - Indicates milligrams per liter, equivalent to parts per million at low concentrations

USEPA HAL - Indicates United States Environmental Protection Agency Health Advisory Level

USEPA NRL - Indicates United States Environmental Protection Agency Negligible Risk Level for Carcinogens

USEPA MCL - Indicates United States Environmental Protection Agency Maximum Contaminant Level

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

APPENDIX C
ANALYTICAL DATA

ANALYTICAL REPORT

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

TestAmerica Job: 04.14280

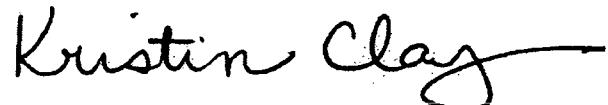
Project Number: ANDEX 04001
Project: AEW-Council Bluffs C&D Landfill(October)

Enclosed is the Analytical Reports for the following samples submitted to the Cedar Falls Division of TestAmerica Analytical Testing Corporation for analysis.

Sample Number	Sample Description	Date Taken	Date Received
830061	MW-2	10/04/2004	10/08/2004
830062	MW-3	10/04/2004	10/08/2004
830063	MW-4	10/04/2004	10/08/2004
830064	MW-9	10/04/2004	10/08/2004
830065	MW-10	10/04/2004	10/08/2004
830066	MW-11	10/04/2004	10/08/2004

TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific samples analyzed.

Reproduction of this analytical report is permitted only in its entirety.



Kristin Clay
Inorganics Operations Manager

ANALYTICAL REPORT

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Sample No.: 830061

Job No: 04.14280

Sample ID: MW-2
ANDERSON E & W-COUNCIL BLUFFS C&D LANDFILL
ANDEX 04001

Date Taken:	10/04/2004	Date Received: 10/08/2004						Analysis
		Result	Units	Flags	Quantitation Limit	Date Analyzed	Time Analyzed	
Chloride, FIA	20.5	mg/L			5.0	10/11/2004	12:45	jcf SM 4500-Cl E
COD, LL	<5.0	mg/L			5.0	10/18/2004		mdk SM 5220 D
Ammonia Nitrogen FIA	0.33	mg/L			0.20	10/12/2004	11:31	lbb EPA 350.1
Phenols, Total(FIA)	<0.020	mg/L			0.020	10/21/2004	15:43	jcf EPA 420.2
Total Organic Halogens	<0.010	mg/L Cl-			0.010	10/14/2004		sas SW 9020B
Dissolved ICP Metals	COMPLETE							llw
Iron, Diss (ICP)	<0.10	mg/L			0.10	10/13/2004		llw SW 6010B
Arsenic, Diss (GFAA)	0.0016	mg/L			0.0010	10/15/2004		mrm SW 7060A

Key to Flags:

ANALYTICAL REPORT

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Sample No.: 830062

Job No: 04.14280

Sample ID: MW-3
ANDERSON E & W-COUNCIL BLUFFS C&D LANDFILL
ANDEX 04001

Date Taken:	10/04/2004	Date Received: 10/08/2004		Quantitation	Date Analyzed	Time Analyzed	Analyst	Analysis Method
		Result	Units	Flags	Limit			
Chloride, FIA	66.6	mg/L			5.0	10/11/2004	12:46	jcf SM 4500-Cl E
COD, LL	<5.0	mg/L			5.0	10/18/2004		mdk SM 5220 D
Ammonia Nitrogen FIA	<0.20	mg/L			0.20	10/12/2004	11:31	lbb EPA 350.1
Phenols, Total(FIA)	<0.020	mg/L			0.020	10/21/2004	15:43	jcf EPA 420.2
Total Organic Halogens	<0.010	mg/L Cl-			0.010	10/14/2004		sas SW 9020B
Dissolved ICP Metals	COMPLETE					10/13/2004		llw
Iron, Diss (ICP)	<0.10	mg/L			0.10	10/13/2004		llw SW 6010B
Arsenic, Diss (GFAA)	0.0103	mg/L			0.0010	10/15/2004		mrm SW 7060A

Key to Flags:

ANALYTICAL REPORT

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Sample No.: 830063

Job No: 04.14280

Sample ID: MW-4
ANDERSON E & W - COUNCIL BLUFFS C&D LANDFILL
ANDEX 04001

Date Taken:	10/04/2004	Date Received: 10/08/2004		Quantitation	Date Analyzed	Time Analyzed	Analyst	Analysis Method
		Result	Units	Flags	Limit			
Chloride, FIA	5.5	mg/L			5.0	10/11/2004	12:46	jcf SM 4500-Cl E
COD, LL	33	mg/L			5.0	10/18/2004		mdk SM 5220 D
Ammonia Nitrogen FIA	<0.20	mg/L			0.20	10/12/2004	11:32	lbb EPA 350.1
Phenols, Total (FIA)	<0.020	mg/L			0.020	10/21/2004	15:44	jcf EPA 420.2
Total Organic Halogens	<0.010	mg/L Cl-			0.010	10/14/2004		sas SW 9020B
Dissolved ICP Metals	COMPLETE					10/13/2004		llw
Iron, Diss (ICP)	<0.10	mg/L			0.10	10/13/2004		llw SW 6010B

Key to Flags:

ANALYTICAL REPORT

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Sample No.: 830064

Job No: 04.14280

Sample ID: MW-9

ANDERSON E & W - COUNCIL BLUFFS C&D LANDFILL
ANDEX 04001

Date Taken:	10/04/2004	Date Received: 10/08/2004		Quantitation	Date	Time	Analysis	Method
		Result	Units	Flags	Limit	Analyzed	Analyzed	Analyst
Chloride, FIA	45.3	mg/L			5.0	10/11/2004	12:47	jcf SM 4500-Cl E
COD, LL	<5.0	mg/L			5.0	10/18/2004		mdk SM 5220 D
Ammonia Nitrogen FIA	<0.20	mg/L			0.20	10/12/2004	11:33	lbb EPA 350.1
Phenols, Total(FIA)	<0.020	mg/L			0.020	10/21/2004	15:45	jcf EPA 420.2
Total Organic Halogens	<0.010	mg/L Cl-			0.010	10/14/2004		sas SW 9020B
Dissolved ICP Metals	COMPLETE					10/13/2004		llw
Iron, Diss (ICP)	<0.10	mg/L			0.10	10/13/2004		llw SW 6010B

Key to Flags:

ANALYTICAL REPORT

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Sample No.: 830065

Job No: 04.14280

Sample ID: MW-10
ANDERSON E & W - COUNCIL BLUFFS C&D LANDFILL
ANDEX 04001

Date Taken:	10/04/2004	Date Received: 10/08/2004		Quantitation	Date	Time	Analysis	Method
		Result	Units	Flags	Limit	Analyzed	Analyzed	Analyst
Chloride, FIA	64.4	mg/L			5.0	10/11/2004	12:48	jcf SM 4500-Cl E
COD, LL	<5.0	mg/L			5.0	10/18/2004		mdk SM 5220 D
Ammonia Nitrogen FIA	<0.20	mg/L			0.20	10/12/2004	11:34	lbb EPA 350.1
Phenols, Total(FIA)	<0.020	mg/L			0.020	10/21/2004	15:46	jcf EPA 420.2
Total Organic Halogens	<0.010	mg/L Cl-			0.010	10/14/2004		sas SW 9020B
Dissolved ICP Metals	COMPLETE							llw
Iron, Diss (ICP)	<0.10	mg/L			0.10	10/13/2004		llw SW 6010B

Key to Flags:

ANALYTICAL REPORT

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Sample No.: 830066

Job No: 04.14280

Sample ID: MW-11
ANDERSON E & W - COUNCIL BLUFFS C&D LANDFILL
ANDEX 04001

Date Taken:	10/04/2004	Date Received: 10/08/2004		Quantitation	Date Analyzed	Time Analyzed	Analyst	Analysis Method
		Result	Units	Flags	Limit			
Chloride, FIA	38.9	mg/L			5.0	10/11/2004	12:51	jcf SM 4500-C1 E
COD, LL	<5.0	mg/L			5.0	10/18/2004		mdk SM 5220 D
Ammonia Nitrogen FIA	<0.20	mg/L			0.20	10/12/2004	11:35	lbb EPA 350.1
Phenols, Total (FIA)	<0.020	mg/L			0.020	10/21/2004	15:51	jcf EPA 420.2
Total Organic Halogens	<0.010	mg/L Cl-			0.010	10/14/2004		sas SW 9020B
Dissolved ICP Metals	COMPLETE					10/13/2004		llw
Iron, Diss (ICP)	<0.10	mg/L			0.10	10/13/2004		llw SW 6010B

Key to Flags:

QUALITY CONTROL REPORT

BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Job Number: 04.14280

Brian Rath

Enclosed is the Quality Control data for the following samples submitted to TestAmerica, Inc. - Cedar Falls for analysis:

Sample Number	Sample Description	Date Taken	Date Received
830061	MW-2	10/04/2004	10/08/2004
830062	MW-3	10/04/2004	10/08/2004
830063	MW-4	10/04/2004	10/08/2004
830064	MW-9	10/04/2004	10/08/2004
830065	MW-10	10/04/2004	10/08/2004
830066	MW-11	10/04/2004	10/08/2004

This Quality Control report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

QUALITY CONTROL REPORT BLANKS

BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Brian Rath

Job Number: 04.14280

Analyte	Prep	Run					
	Batch	Batch	Blank	Analysis	Units	Date	Analyst
	Number	Number					
Chloride, FIA		1092	<5.0	mg/L	10/11/2004	jcf	
COD, LL		699	<5.0	mg/L	10/18/2004	mdk	
COD, LL		700	<5.0	mg/L	10/18/2004	mdk	
Ammonia Nitrogen FIA		590	<0.20	mg/L	10/12/2004	lbb	
Phenols, Total(FIA)		1485	<0.020	mg/L	10/21/2004	jcf	
Phenols, Total(FIA)		1486	<0.020	mg/L	10/21/2004	jcf	
Total Organic Halogens		1338	<0.010	mg/L	10/11/2004	sas	
Total Organic Halogens		1338	<0.010	mg/L	10/12/2004	sas	
Total Organic Halogens		1338	<0.010	mg/L	10/13/2004	sas	
Total Organic Halogens		1338	<0.010	mg/L	10/14/2004	sas	
Total Organic Halogens		1339	<0.010	mg/L	10/12/2004	sas	
Total Organic Halogens		1339	<0.010	mg/L	10/13/2004	sas	
Total Organic Halogens		1339	<0.010	mg/L	10/14/2004	sas	
Dissolved ICP Metals		1711	COMPLETE		10/13/2004	llw	
Iron, Diss (ICP)		1668	<0.10	mg/L	10/13/2004	llw	
Arsenic, Diss (GFAA)		1035	<0.0010	mg/L	10/15/2004	mrm	

NA - Not Applicable

Advisory Control Limits for Blanks:

All compounds should be less than the quantitation limit.

QUALITY CONTROL REPORT STANDARDS

BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Brian Rath

Job Number: 04.14280

Analyte	Prep	Run			
	Batch	Batch	CCV	LCS	Analyst
	Number	Number	% Recovery	% Recovery	
Phenols, Total (FIA)		1486	100.8		
Total Organic Halogens		1338	108.0	90.0	sas
Total Organic Halogens		1338	105.0		
Total Organic Halogens		1338	95.5		
Total Organic Halogens		1338	102.2		
Total Organic Halogens		1339	107.2	94.1	sas
Total Organic Halogens		1339	104.2		
Total Organic Halogens		1339	96.4		
Dissolved ICP Metals		1711	100.0		
Iron, Diss (ICP)		1668	105.4		
Iron, Diss (ICP)		1668	106.0		
Arsenic, Diss (GFAA)		1035	104.9		
Arsenic, Diss (GFAA)		1035	109.8		

CCV - Continuing Calibration Verification

LCS - Laboratory Control Standard

NA - Not Applicable

QUALITY CONTROL REPORT MATRIX SPIKE

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Job Number: 04.14280

Analyte	Prep	Run	Conc.		Sample	Conc.	MS	Date
	Batch	Batch	Spike	Units		MS	%	
	No.	No.	Added	Result		Result	Rec.	Flag
Dissolved ICP Metals		1711	1.0		COMPLETE			10/13/2004
Iron, Diss (ICP)		1668	1.92	mg/L	<0.10	1.97	103	10/13/2004
Iron, Diss (ICP)		1668	1.92	mg/L	<0.10	2.00	104	10/13/2004
Arsenic, Diss (GFAA)		1035	0.0227	mg/L	<0.0010	0.0240	106	10/15/2004
Arsenic, Diss (GFAA)		1035	0.0227	mg/L	0.0170	0.0353	81	10/15/2004

QUALITY CONTROL REPORT DUPLICATES

Brian Rath
BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Job Number: 04.14280

Analyte	Prep	Run	Duplicate				RPD	Date	Max.
	Batch	Batch	Sample	Sample	Units	Flag			
	No.	No.	Result	Result					
Dissolved ICP Metals		1711	COMPLETE	COMPLETE				10/13/2004	20
Iron, Diss (ICP)		1668	<0.10	<0.10	mg/L			10/13/2004	20
Iron, Diss (ICP)		1668	<0.10	<0.10	mg/L			10/13/2004	20
Arsenic, Diss (GFAA)		1035	<0.0010	<0.0010	mg/L			10/15/2004	20
Arsenic, Diss (GFAA)		1035	0.0234	0.0230	mg/L	1.7		10/15/2004	20

QUALITY CONTROL REPORT MATRIX SPIKE/MATRIX SPIKE DUPLICATE

BARKER, LEMAR & ASSOCIATES
1801 Industrial Circle
West Des Moines, IA 50265

10/22/2004

Brian Rath

Job Number: 04.14280

Analyte	Prep	Run	Analysis	Units	MS	MS	MSD	MSD	MS/MSD
	Batch	Batch			Result	% Recovery	Result	% Recovery	RPD
	Number	Number							
Chloride, FIA		1092	37.4	mg/L	60.3	91.6	60.3	91.6	0.0
COD, LL		699	<5.0	mg/L	56	112.0	56.3	112.6	0.5
COD, LL		700	<5.0	mg/L	44.1	88.2	42.4	84.8	3.9
Ammonia Nitrogen FIA		590	<0.20	mg/L	10.2	102.0	10.4	104.0	1.9
Phenols, Total(FIA)		1485	<0.020	mg/L	0.096	96.0	0.103	103.0	7.0
Phenols, Total(FIA)		1486	<0.020	mg/L	0.097	97.0	0.098	98.0	1.0
Total Organic Halogens		1338	<0.010	mg/L C	0.09924	99.2	0.09376	93.8	5.7
Total Organic Halogens		1339	0.032	mg/L C	0.14232	110.3	0.15257	120.6	7.0

NOTE: Matrix Spike Samples may not be samples from this job.

NA = Not Applicable

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

www.testamericainc.com

TestAmerica Analytical Testing Corporation | TestAmerica Drilling Corporation | TestAmerica Air Emission Corporation

TestAmerica Job Number: 04.14280

ATTACHMENTS

Following are the sample receipt log and the chain of custody applicable to this analytical report.

Any abnormalities or departures from sample acceptance policy shall be documented on the "Sample Receipt and Temperature Log Form" and Sample Non-Conformance Form" (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility please visit our website at www.TestAmericaInc.com.

This data has been produced in compliance with 2002 NELAC Standards (July 2004), except where noted.

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) and are sampled in accordance with TA-CF SOP CF09-01.

This report shall not be reproduced, except in full, without written approval of the laboratory.

For questions regarding this report, please contact the individual who signed the analytical report.

Test America

Incorporated

704 Enterprise Drive
Cedar Falls, Iowa 50613

SAMPLER:

SITE NAME: Anderson Excavating & Wrecking, Council Bluffs C&D Landfill

ADDRESS: 1801 Industrial Circle

CITY/STATE/ZIP: West Des Moines, IA 50265

TELEPHONE NUMBER: 515-256-8814

Fax: 515-256-0152

SAMPLED BY: (PRINT NAME) Joe Herrick

SIGNATURE:

Phone: 319-277-2401 or 1-800-750-2401

Fax: 515-792-7989

REPORT TO:

NAME: Brian Rath

COMPANY NAME: Barker Lemar Engineering Consultants

PROJECT NAME: Anderson Excavating & Wrecking, Council Bluffs C&D Landfill (October)

PROJECT NUMBER: ANDEX 04001

ADDRESS: 1801 Industrial Circle

CITY/STATE/ZIP: West Des Moines, IA 50265

LABORATORY WORK ORDER NO.

Sample ID	Date Sampled	Time Sampled	# of Containers Shipped	Grab	Composite	Field Filtered	Preservative						Matrix				Analyze For:				Standard TAT	LABORATORY SAMPLE NUMBER	Fax Results	
							Ice	HNO ₃ (Red & White Label)	HCl (Blue & White Label)	HgCl (Orange & White Label)	H ₂ SO ₄ Plastic (Yellow & White Label)	H ₂ SO ₄ Glass (Yellow & White Label)	None (Black & White Label)	Other (Specify):	Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other (Specify):				"rd" list
MW-2	10-4	11:05	5	X	X	X	X	X	X	X		X	X	X										
MW-3		11:25										X	X	X										
MW-4		11:50										X	X	X										
MW-9		10:00										X	X	X										
MW-10		10:20										X	X	X										
MW-11		10:45										X	X	X										
Relinquished by:	Date:	Time:	Received by:						Date:	Time:	Relinquished by:						Date	Time						
<i>John Abigail</i>	10-8-04																							
Shipped Via:	Comments:													Shipped Via:										
Received for Lab by:	Date:	Time:	Temperature Upon Receipt:						Laboratory Comments:															
<i>Mark Lee</i>	10-8-04	19:00																						

TestAmerica

704 ENTERPRISE DRIVE • CEDAR FALLS, IA 50613 • 800-750-2401 • 319-277-2425 FAX

ANALYTICAL TESTING CORPORATION

Sample Receipt and Temperature Log Form

Client: Barker Loure

Project: Anderson Excavating
& Wrecking

City: West Des Moines

Date: 10-3-04 Receiver's Initials MM

Time (Delivered): 19:00

Temperature Record

Cooler ID# (If Applicable)

OA - 1

2 °C / On Ice

Temp Blank

Temperature out of compliance

Thermometer:

- IR - 905085 "A"
- IR - 809065 "B"
- CF07-03-T2
- 22126775

Courier:

- | | |
|------------------------------------|--|
| <input type="checkbox"/> Airborne | <input type="checkbox"/> Speedy |
| <input type="checkbox"/> UPS | <input checked="" type="checkbox"/> TA Courier |
| <input type="checkbox"/> Velocity | <input type="checkbox"/> TA Field Svcs |
| <input type="checkbox"/> FedEx | <input type="checkbox"/> Client |
| <input type="checkbox"/> DHL | <input type="checkbox"/> Other |
| <input type="checkbox"/> US Postal | |

Custody seals present?

Yes

Custody seals intact?

Yes No

Non-Conformance report started

Exceptions Noted

Sample(s) not received in a cooler.

Samples(s) received same day of sampling.

Temperature not taken:

Log-In by:

JP MF EM

OT _____

*Refer to SOP CF01-01 for Temperature Criteria

APPENDIX D
EXCEEDANCE TABLES

**Summary of Statistical Exceedances
Groundwater Monitoring Wells
by Well Cluster**

Page 1 of 1

Council Bluffs Construction and Demolition Landfill - 78-SDP-01-89

MW-10 - Cluster DN2

Chloride

Mean: 8.52 **STD:** 4.36 **Exceedances Level:** 17.233

Current Action Levels **None Established**

4/15/2004 37.2 mg/L
10/4/2004 64.4 mg/L

MW-11 - Cluster DN1

Specific Conductance

Mean: 1,108.2 **STD:** 501.3 **Exceedances Level:** 2,110.83

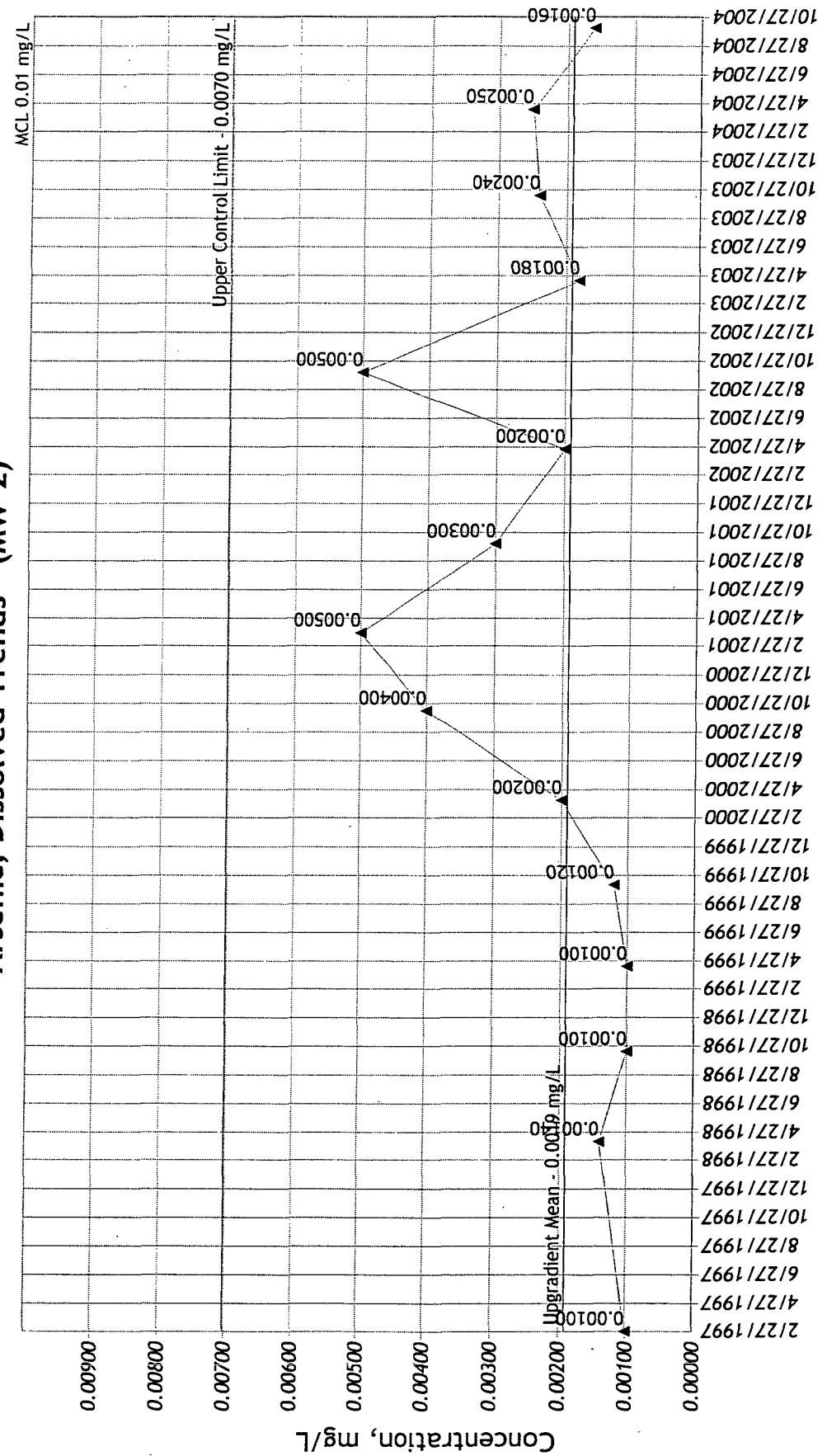
Current Action Levels **None Established**

10/4/2004 2,528 umhos/cm

APPENDIX E

**GRAPHS OF ANALYTICAL
PARAMETERS / MONITORING POINTS**

Arsenic, Dissolved Trends - (MW-2)

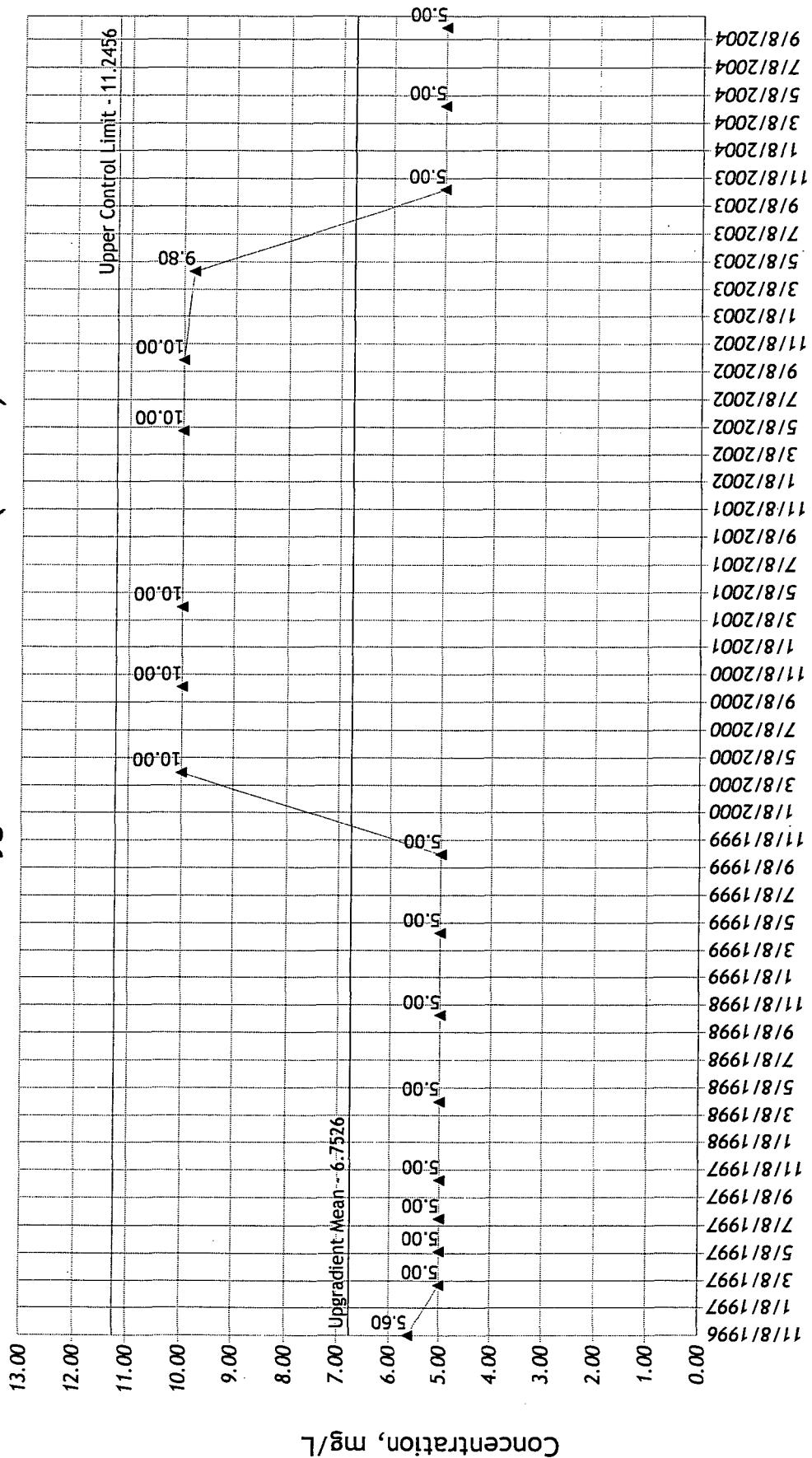


1
Arsenic, Dissolved
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

04001

10/28/2004 11:41:37 AM

Chemical Oxygen Demand Trends - (MW-11)



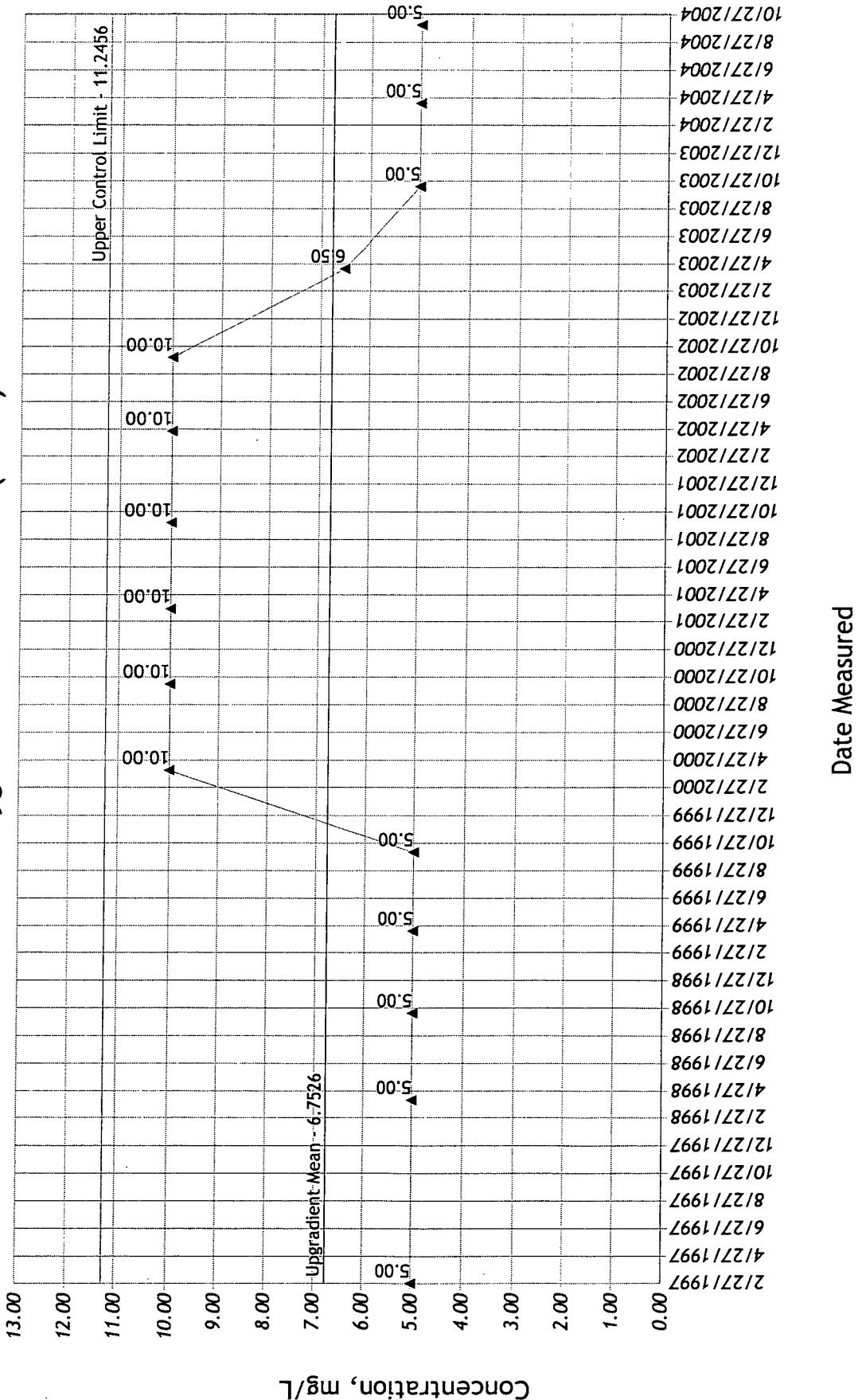
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**Chemical Oxygen Demand
Council Bluffs Construction and Demolition Landfill**
78-SDP-01-89

04001

10/28/2004 11:41:38 AM

Chemical Oxygen Demand Trends - (MW-2)



3
Chemical Oxygen Demand
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

04001

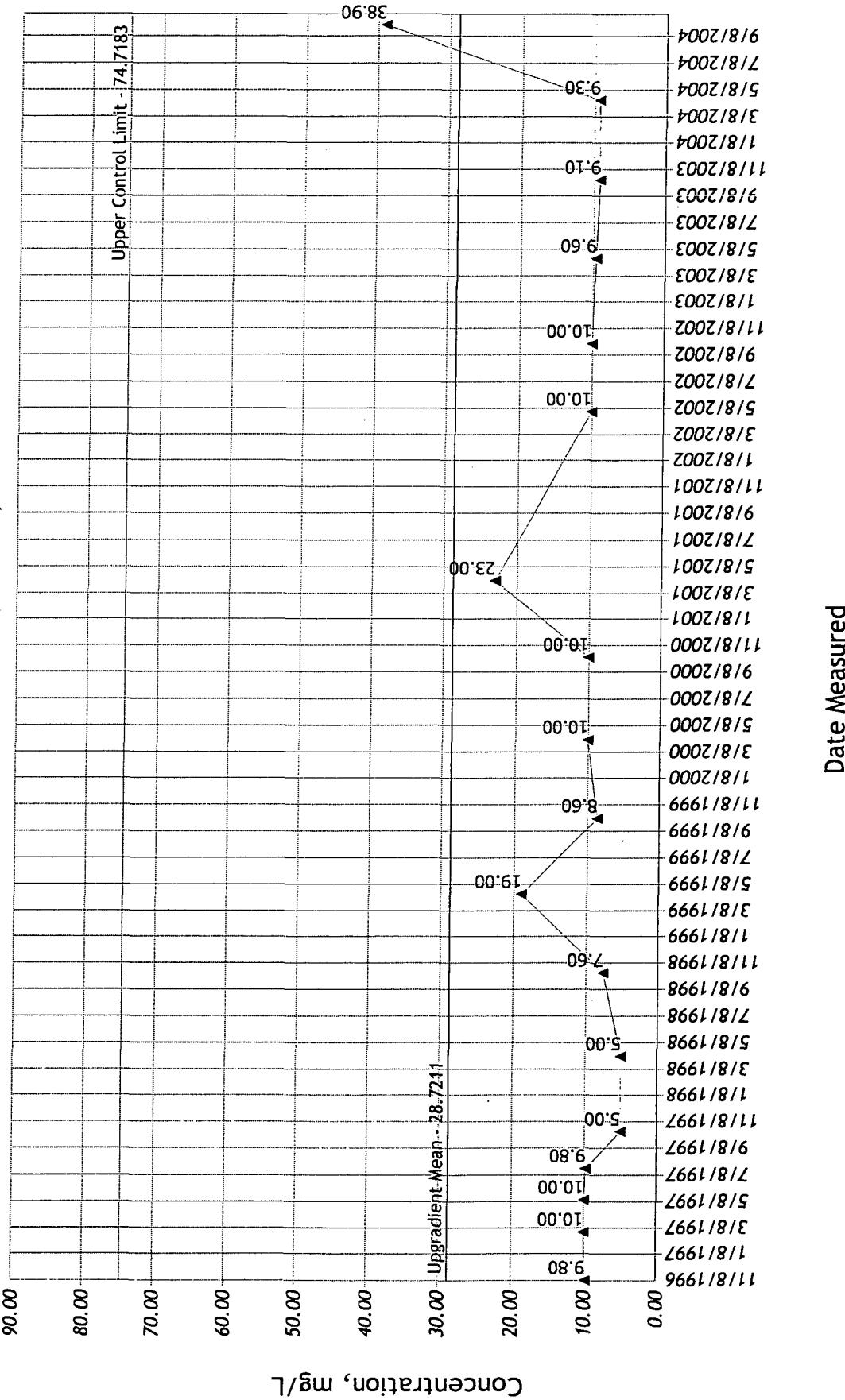
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Chloride
Council Bluffs Construction and Demolition Landfill
 78-SDP-01-89

5

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Chloride Trends - (MW-11)

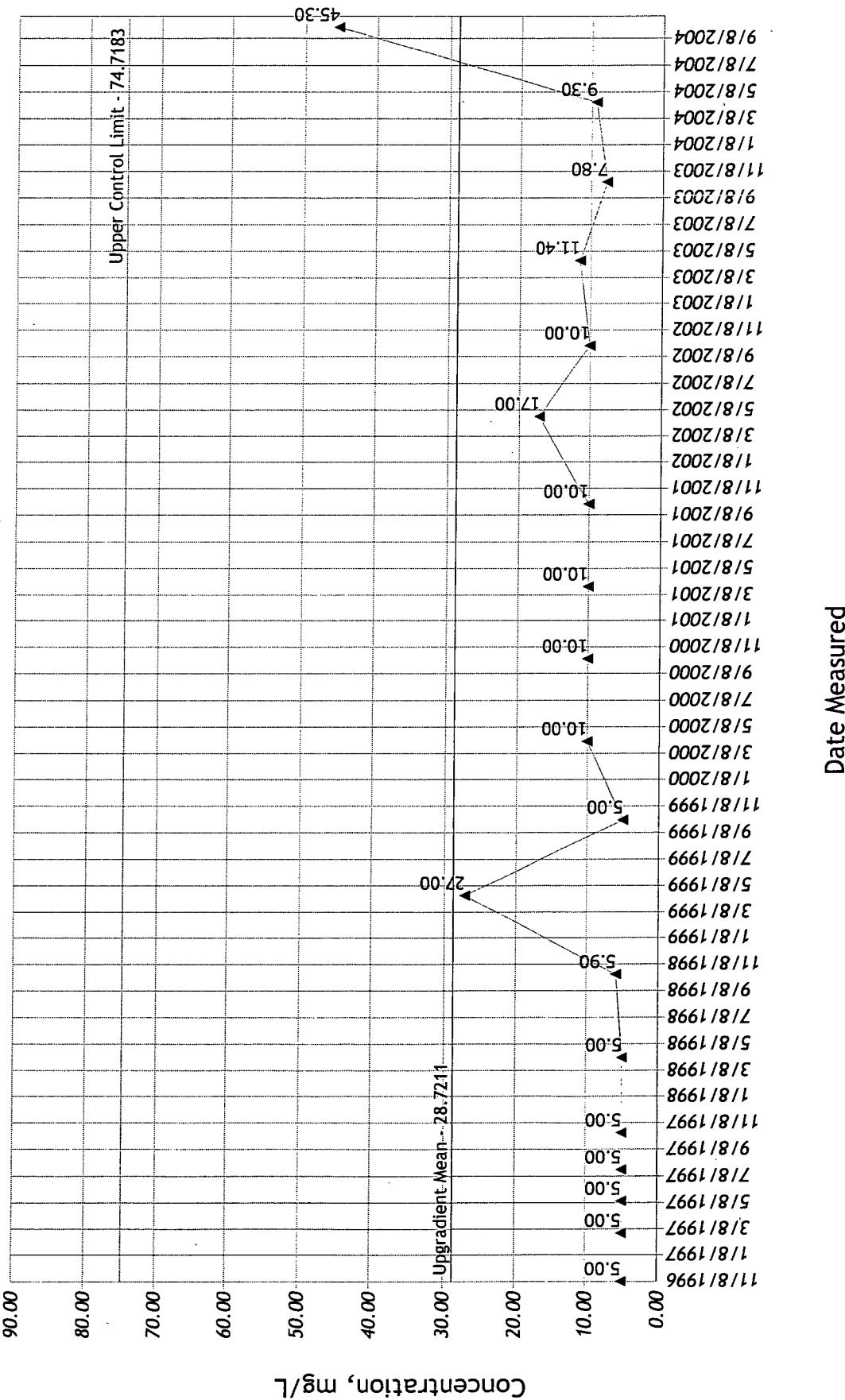


Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

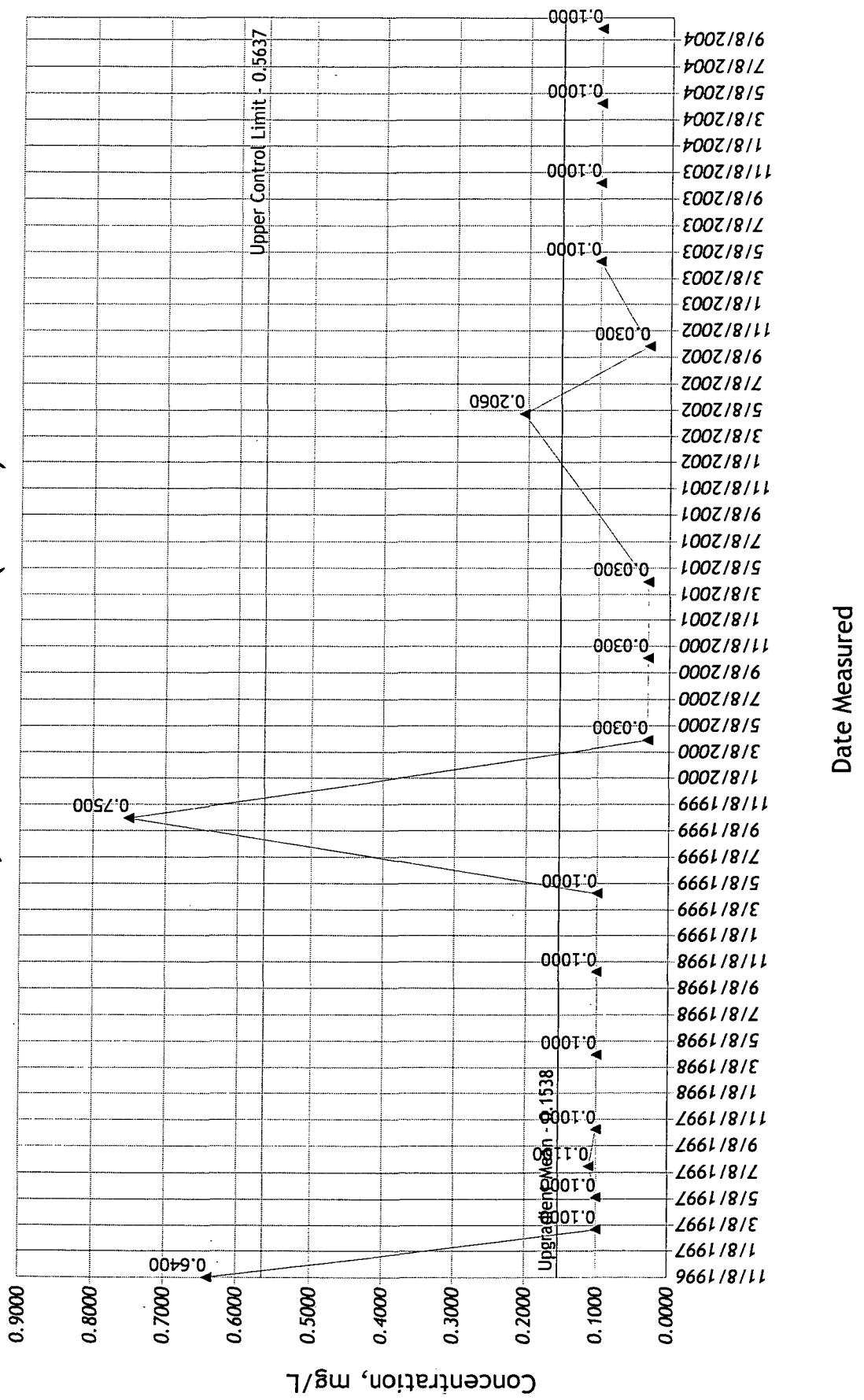
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7

Chloride Trends - (MW-9)



Iron, Dissolved Trends - (MW-11)

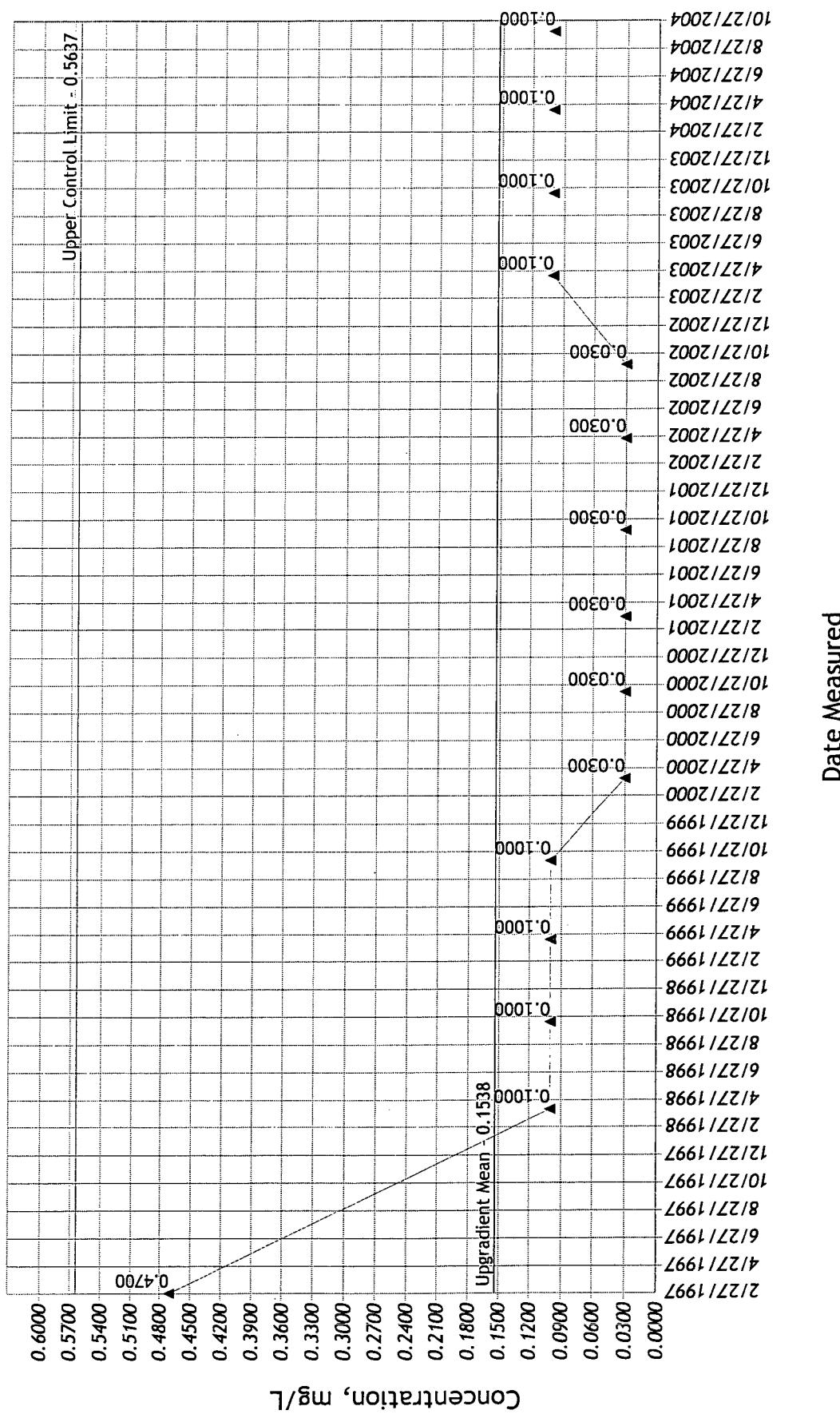


Iron, Dissolved
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

Iron, Dissolved
Council Bluffs Construction and Demolition Landfill
 78-SDP-01-89

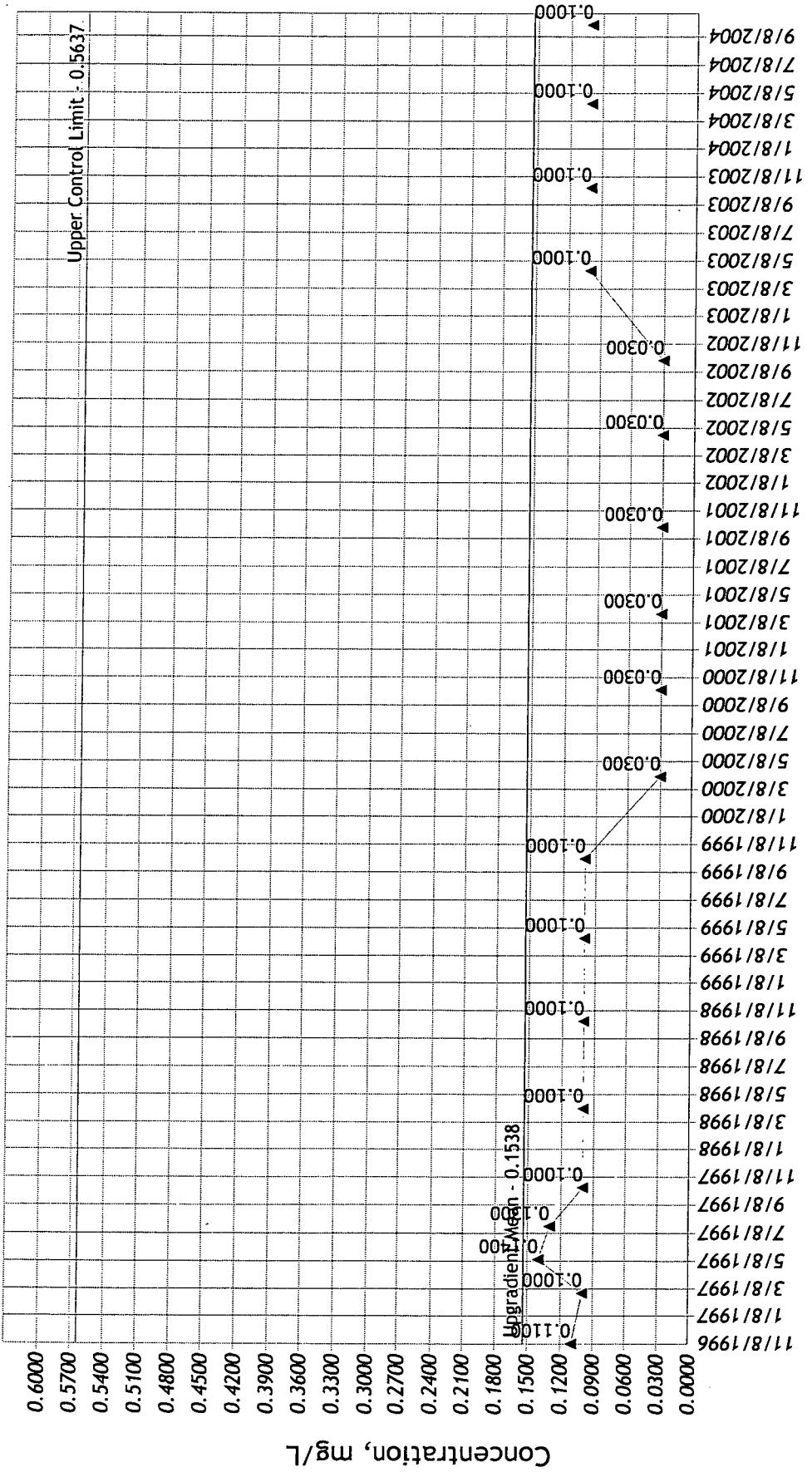
9

Iron, Dissolved Trends - (MW-2)



04001
 10/28/2004 11:41:41 AM

Iron, Dissolved Trends - (MW-9)



Date Measured

Iron, Dissolved

Council Bluffs Construction and Demolition Landfill

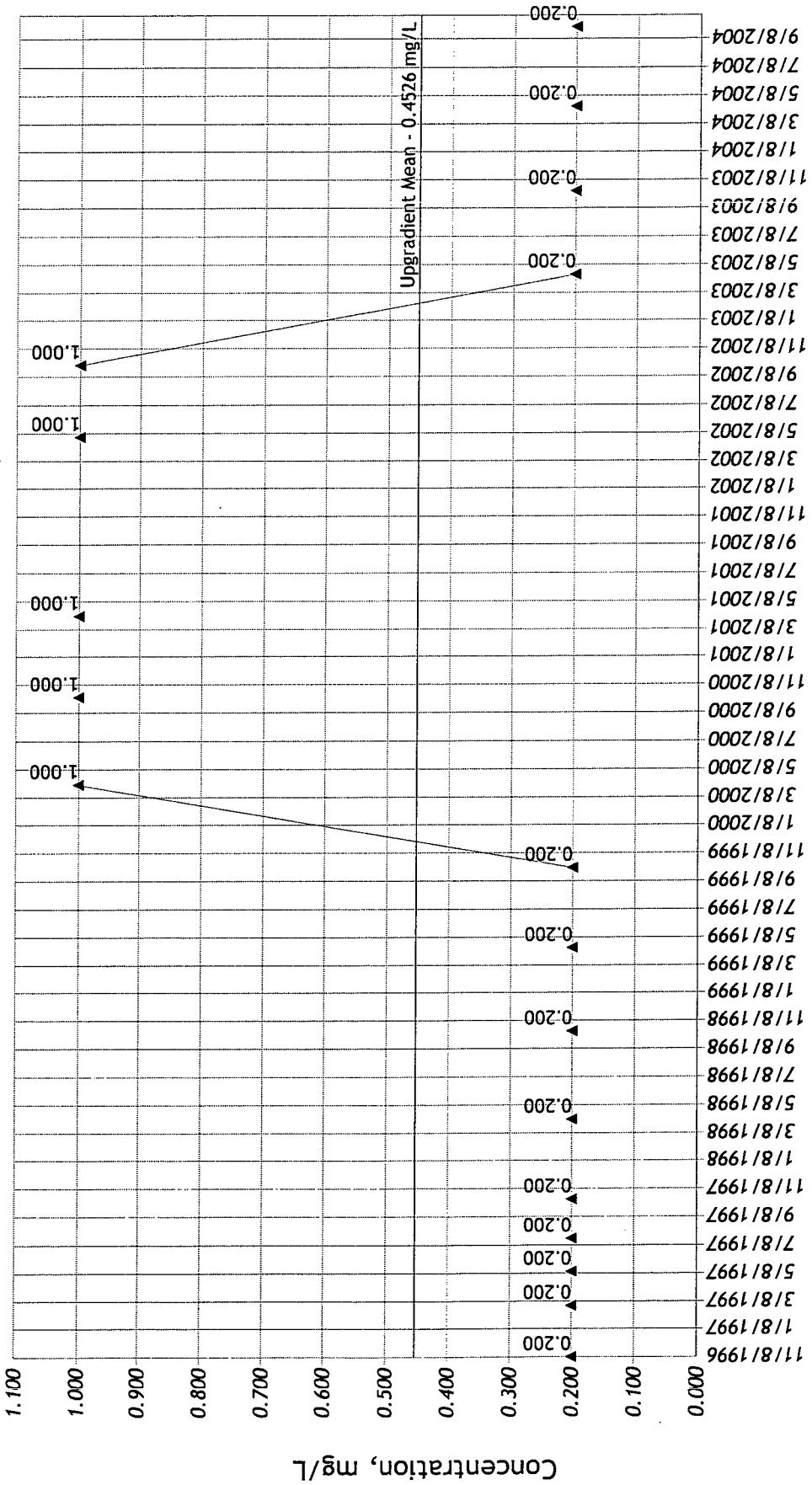
78-SDP-01-89

10

04001

10/28/2004 11:41:41 AM

Nitrogen, Ammonia Trends - (MW-11)



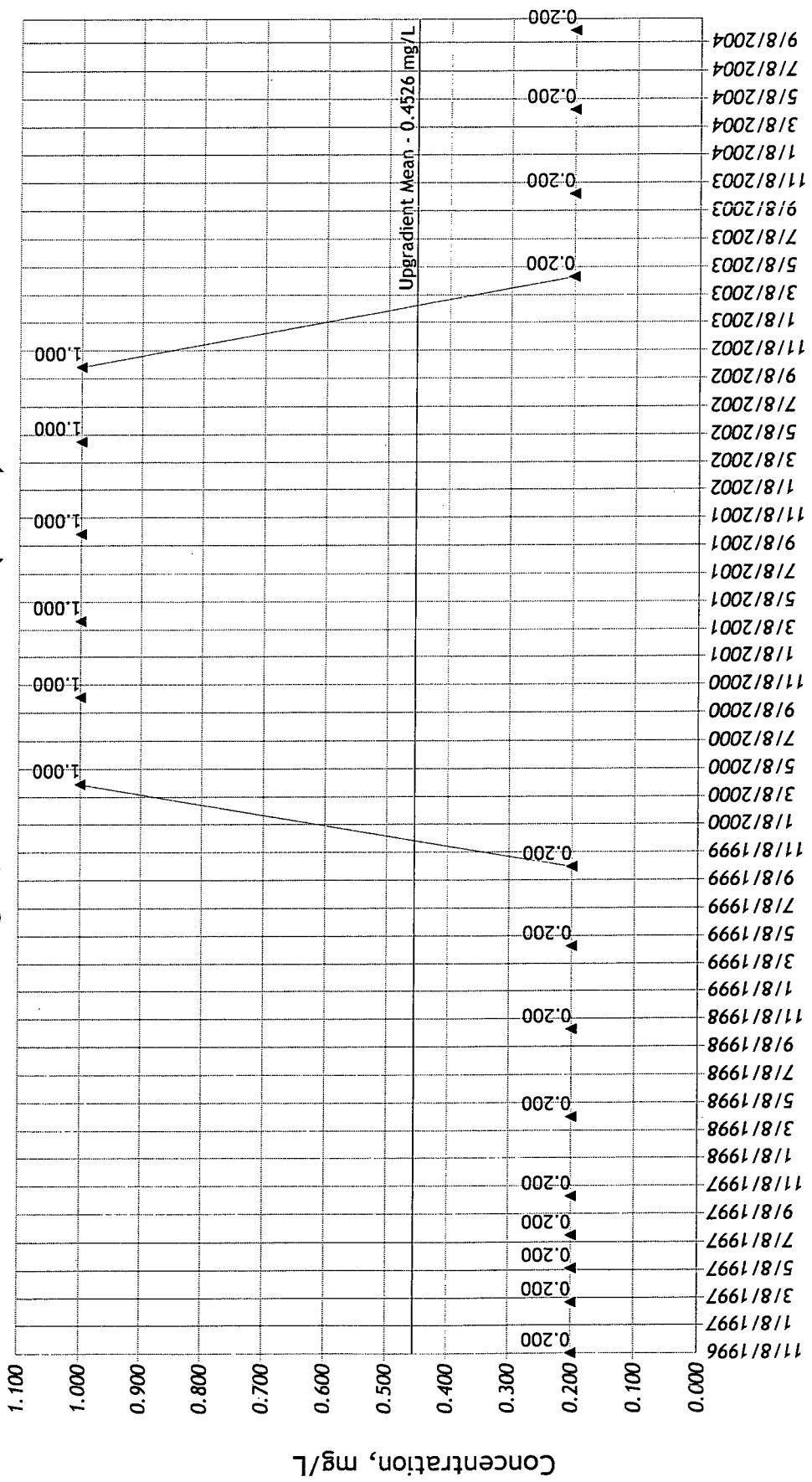
Note: The upper control limit is not shown as the standard deviation was not calculated due to consistent parameter non-detect in the up-gradient monitoring point.

11
Nitrogen, Ammonia
Council Bluffs Construction and Demolition Landfill
 78-SDP-01-89

04001

10/28/2004 11:41:42 AM

Nitrogen, Ammonia Trends - (MW-9)



Note: The upper control limit is not shown as the standard deviation was not calculated due to consistent parameter non-detect in the up-gradient monitoring point.

13
Nitrogen, Ammonia
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

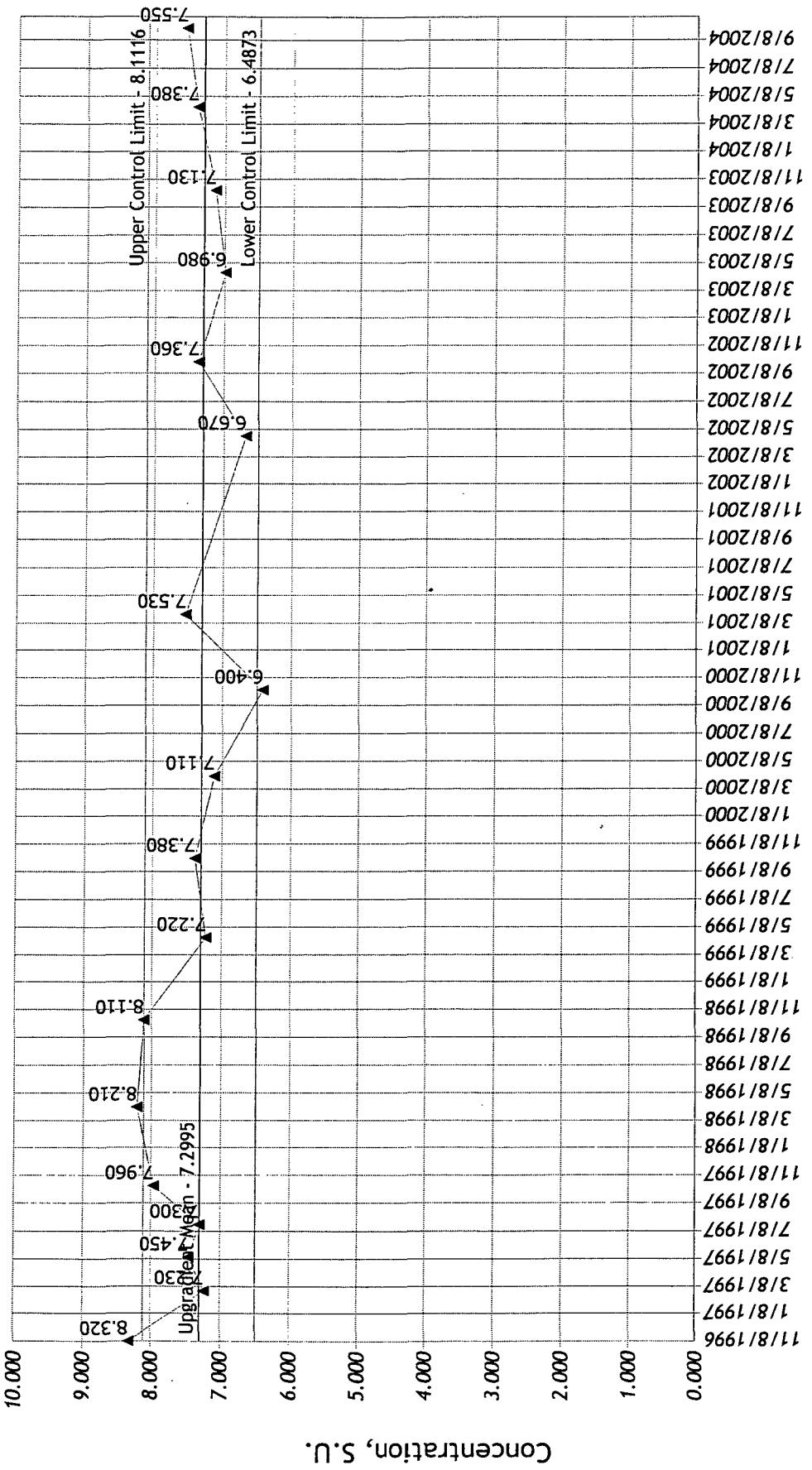
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pH
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

04001
10/28/2004 11:41:43 AM

pH Trends - (MW-11)



pH

78-SDP-01-89

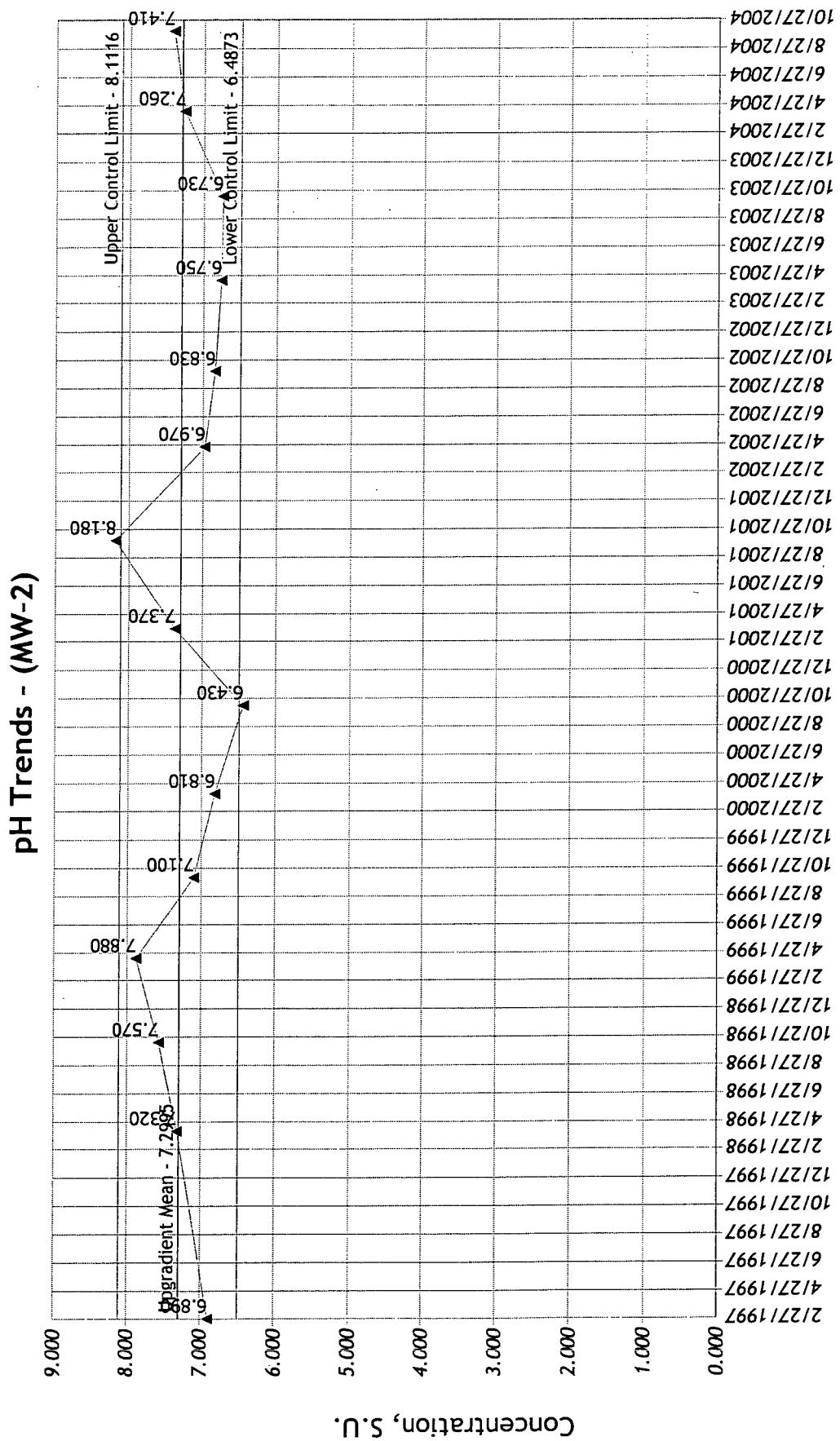
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Council Bluffs Construction and Demolition Landfill

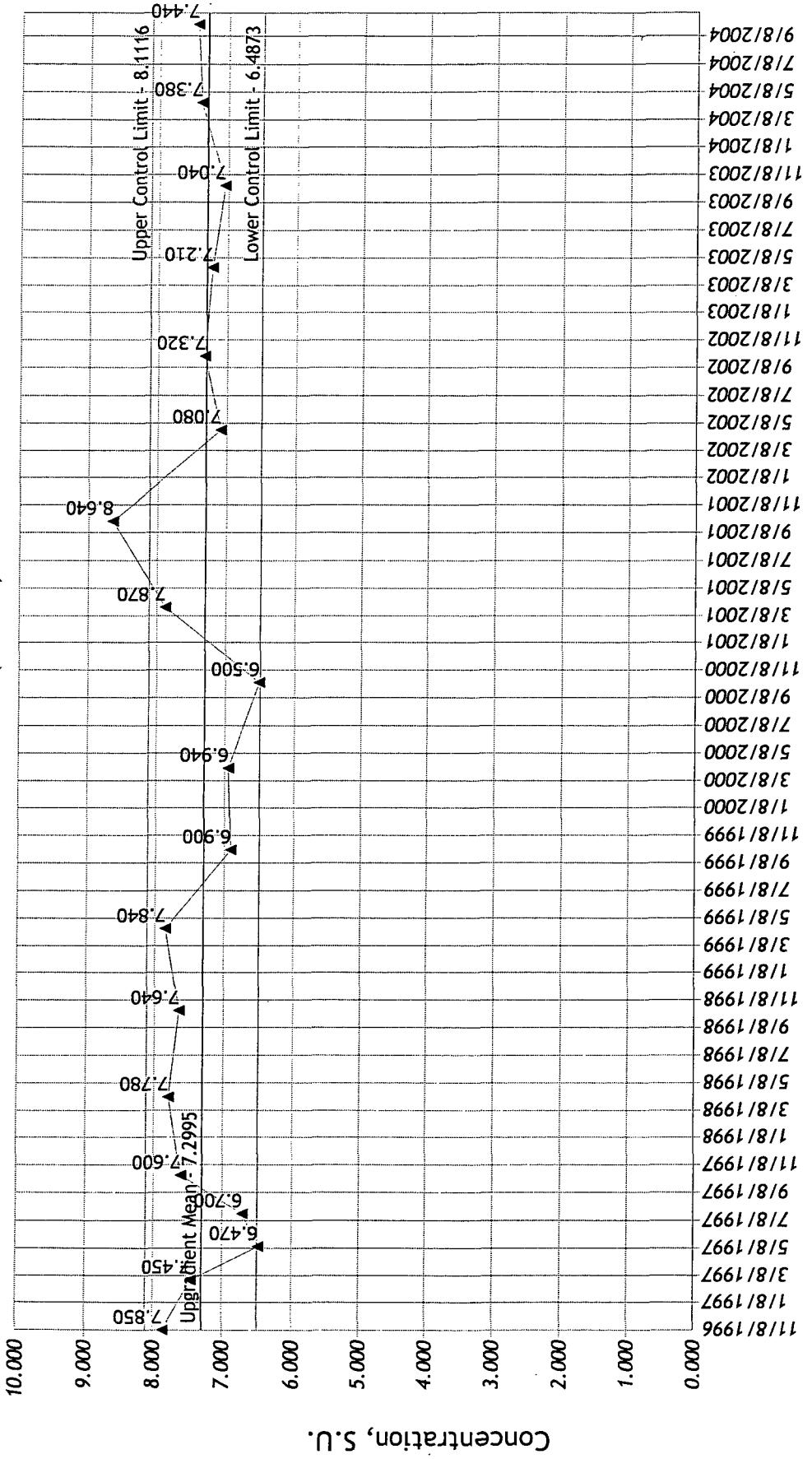
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Date Measured



pH Trends - (MW-9)

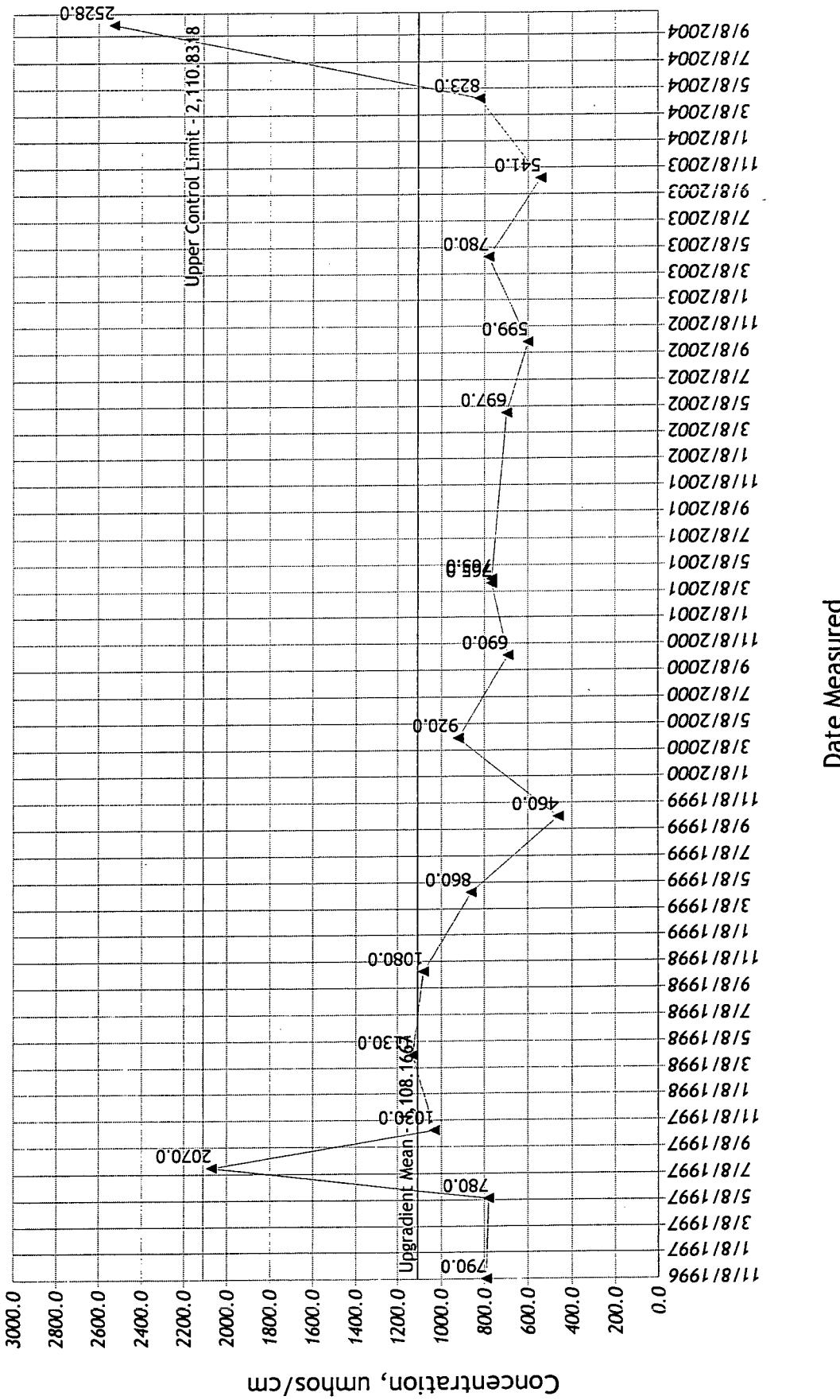


pH
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

16
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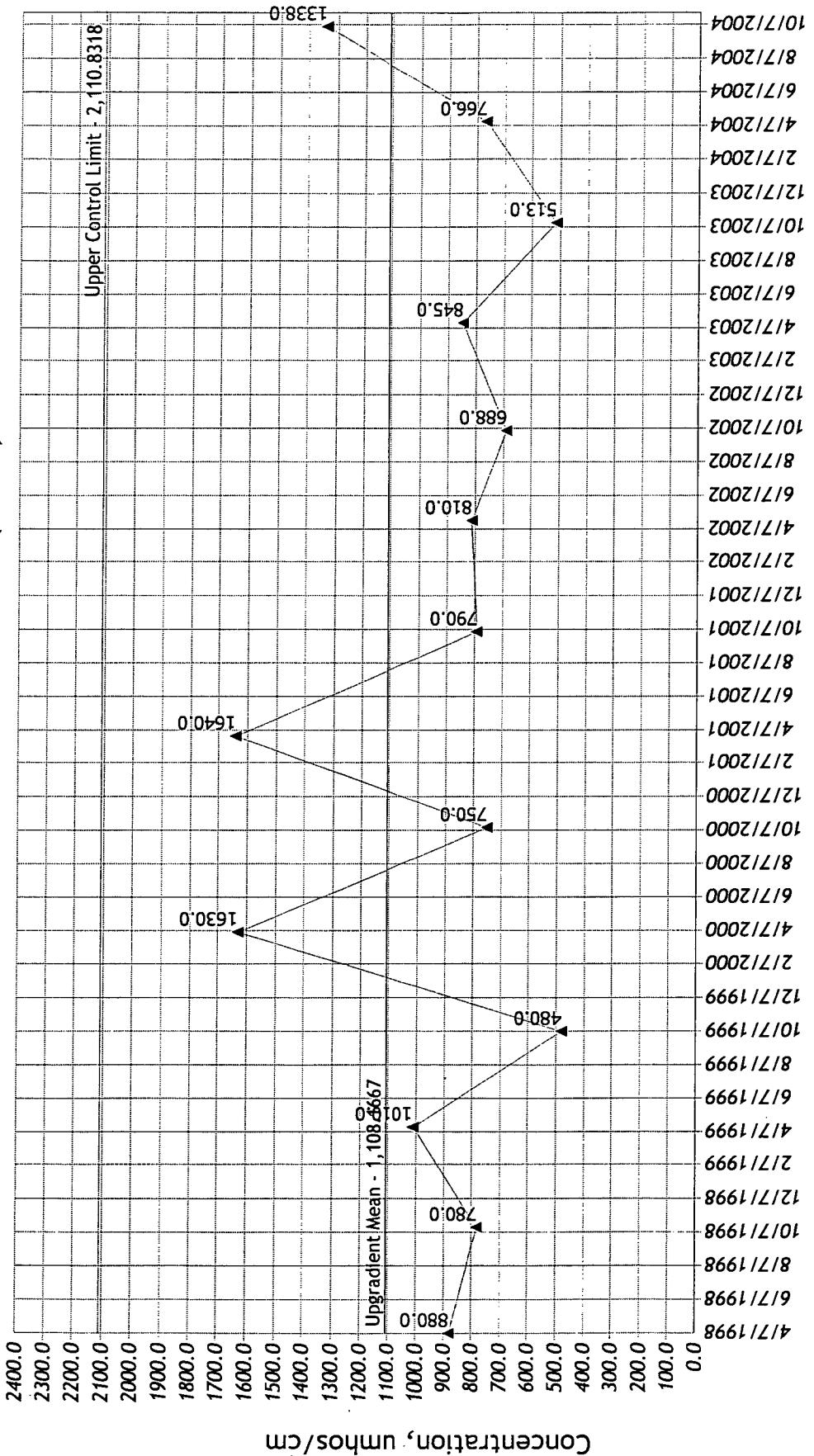
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Specific Conductance Trends - (MW-11)

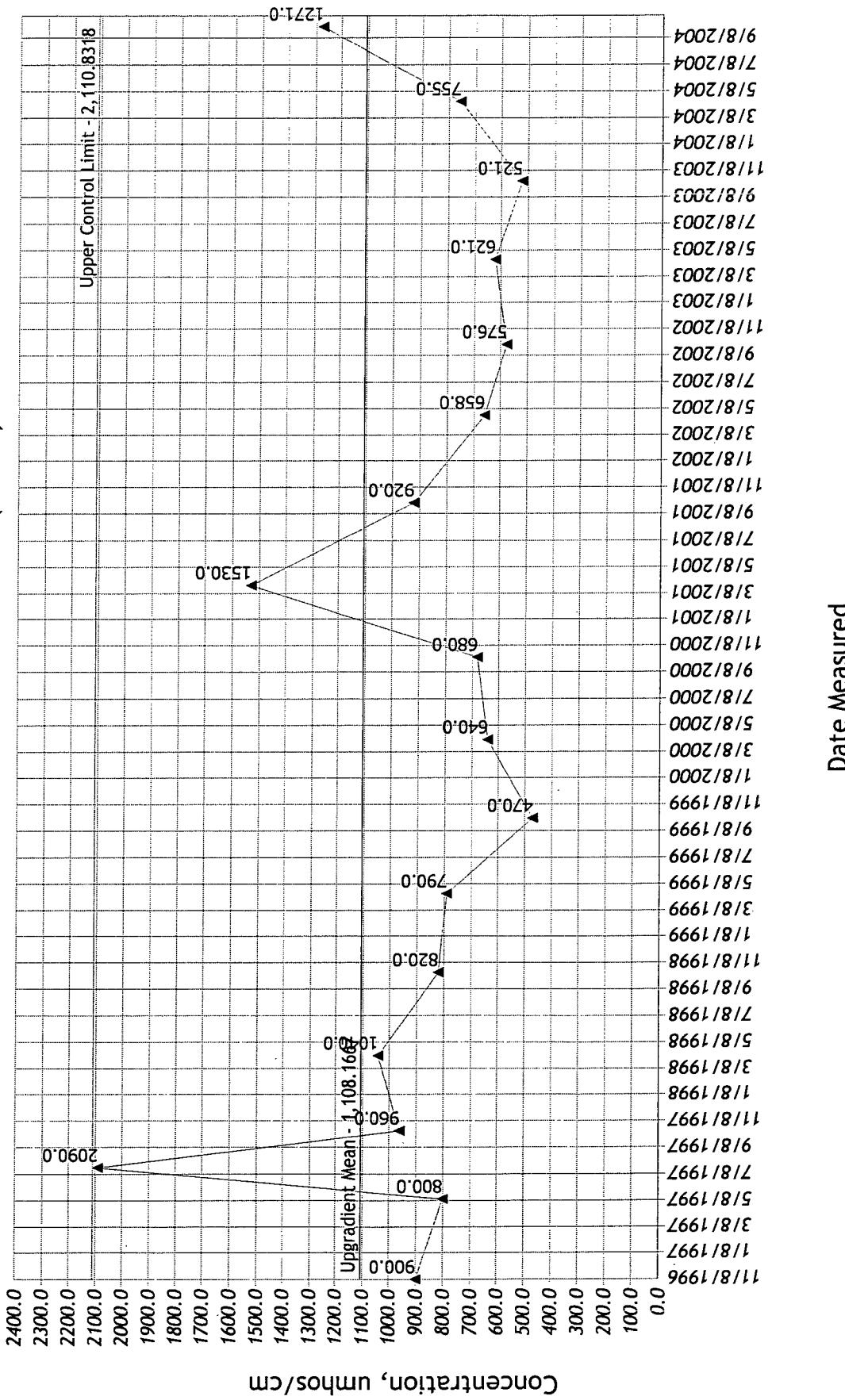


Specific Conductance
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

Specific Conductance Trends - (MW-2)

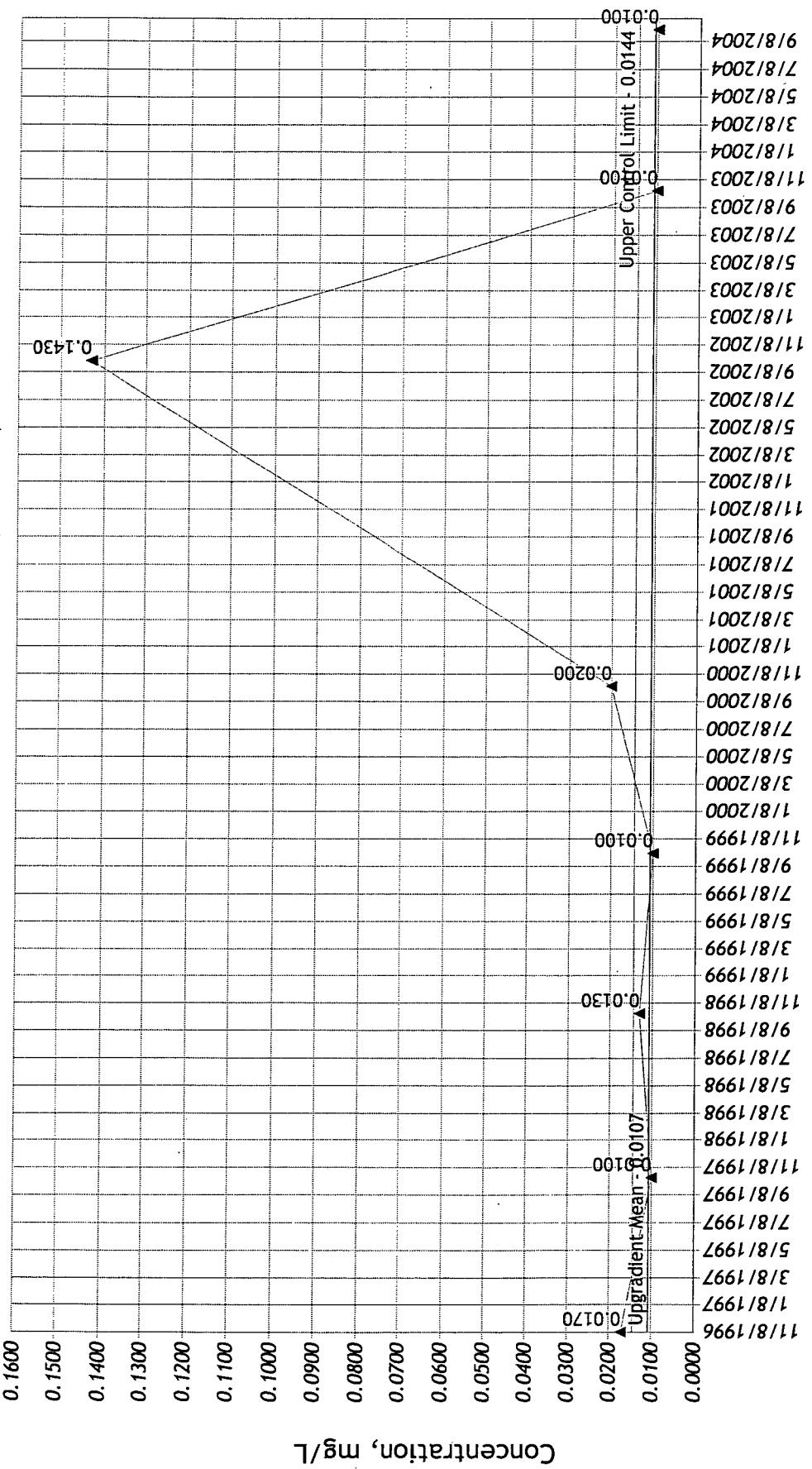


Specific Conductance Trends - (MW-9)



Specific Conductance
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

Total Organic Halogens Trends - (MW-11)



**Total Organic Halogens
Council Bluffs Construction and Demolition Landfill**
78-SDP-01-89

04001

10/28/2004 11:41:45 AM

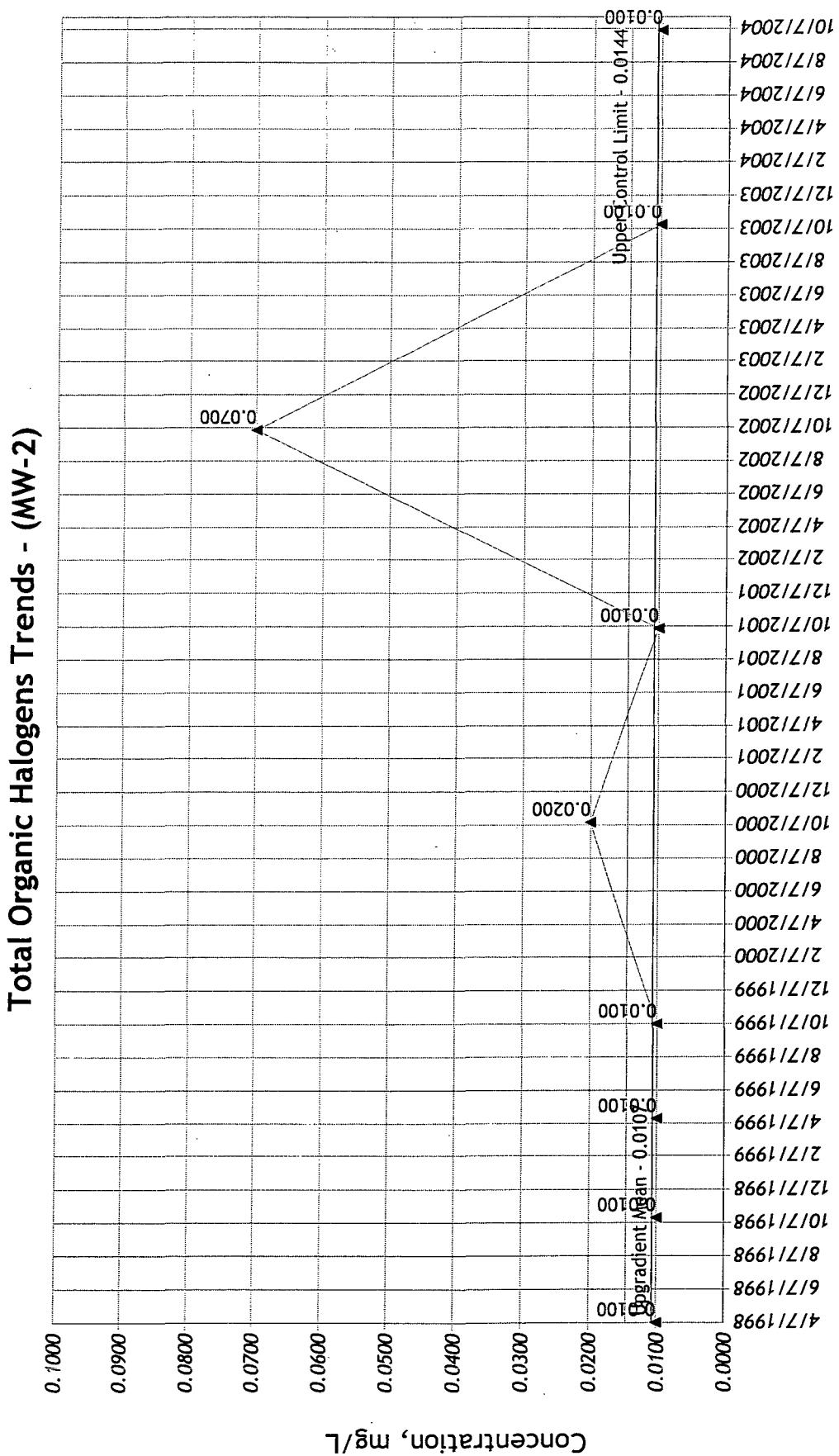
Total Organic Halogens
Council Bluffs Construction and Demolition Landfill
 78-SDP-01-89

2.1

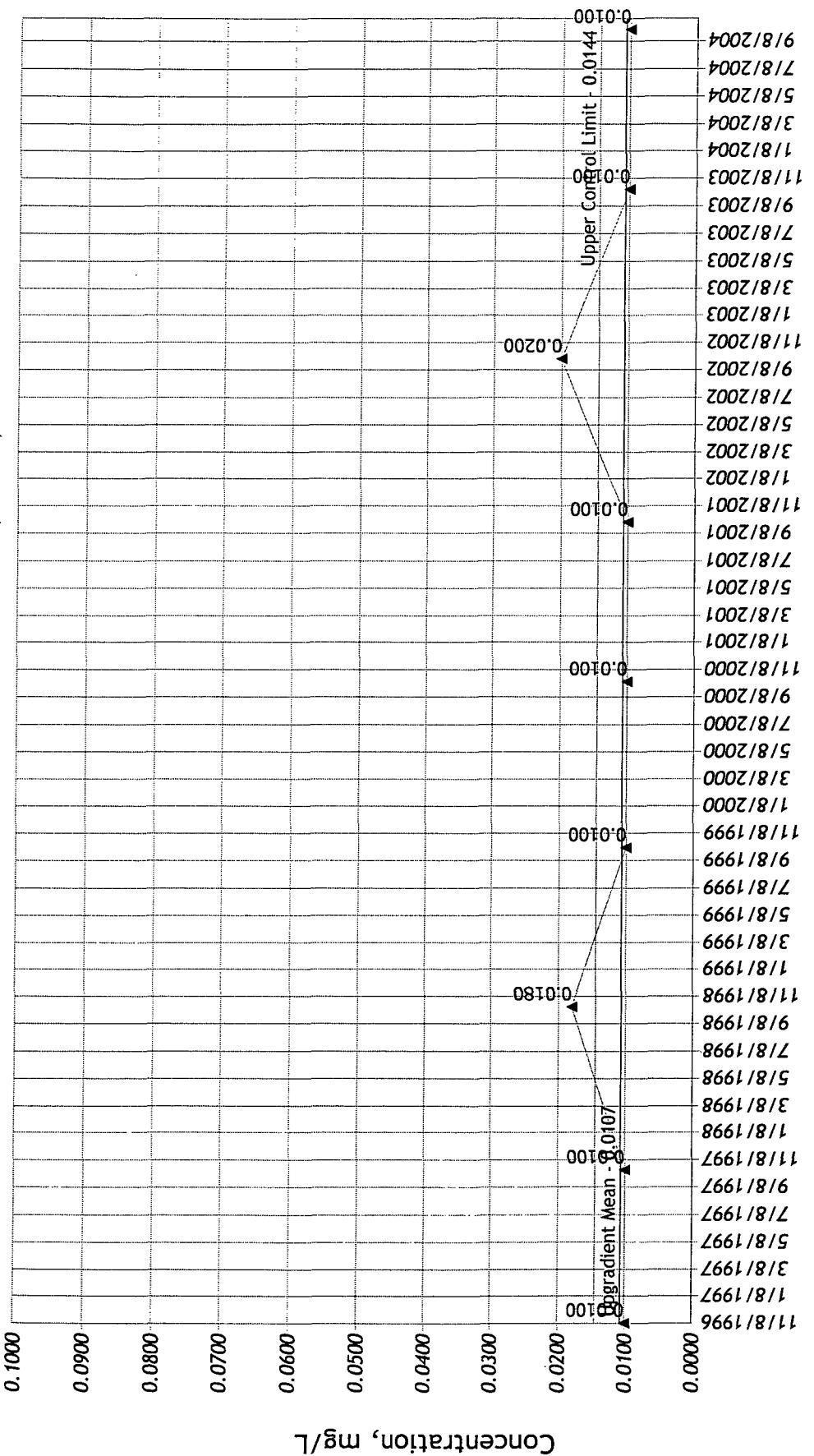
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Date Measured



Total Organic Halogens Trends - (MW-9)



22

**Total Organic Halogens
Council Bluffs Construction and Demolition Landfill**
78-SDP-01-89

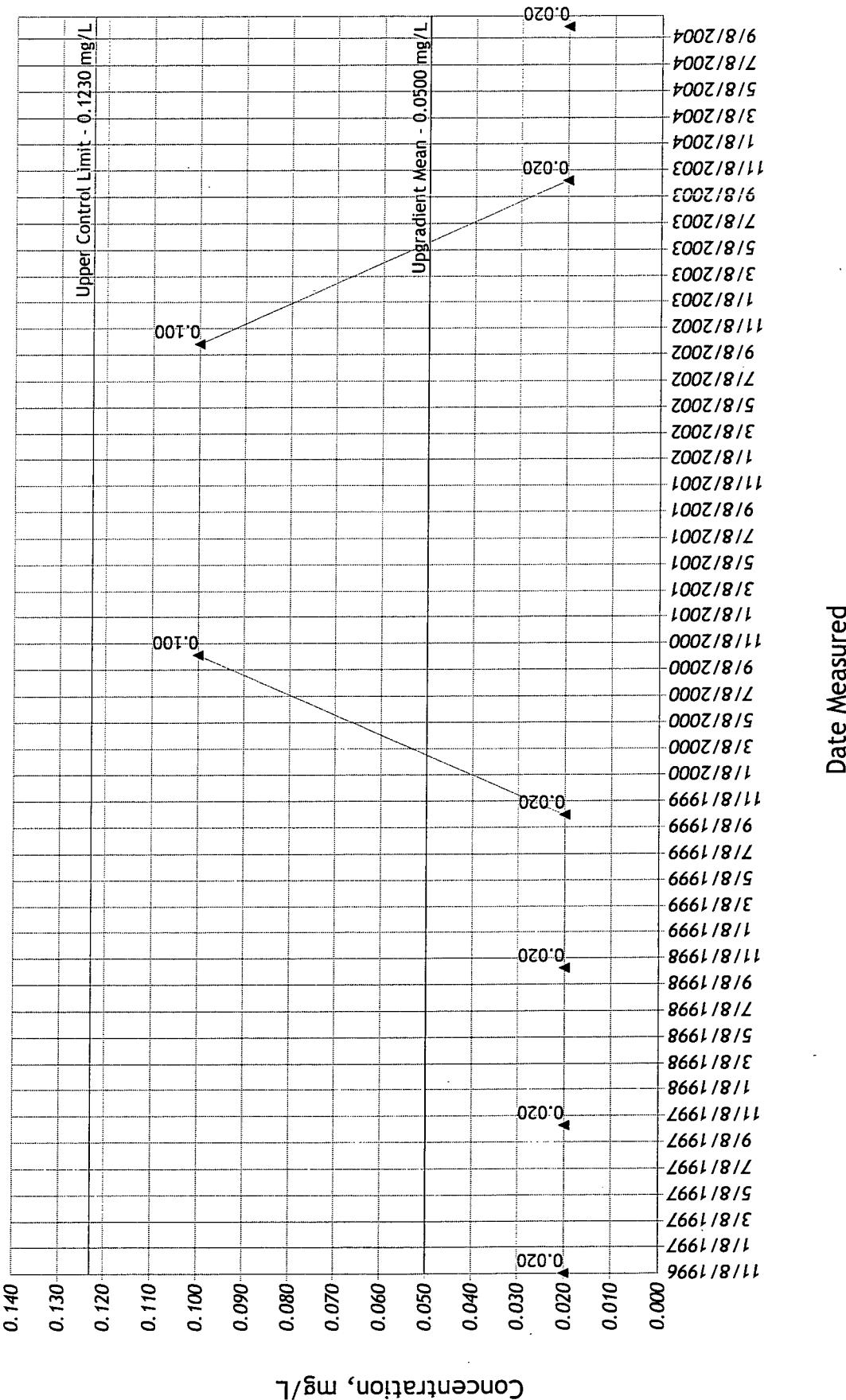
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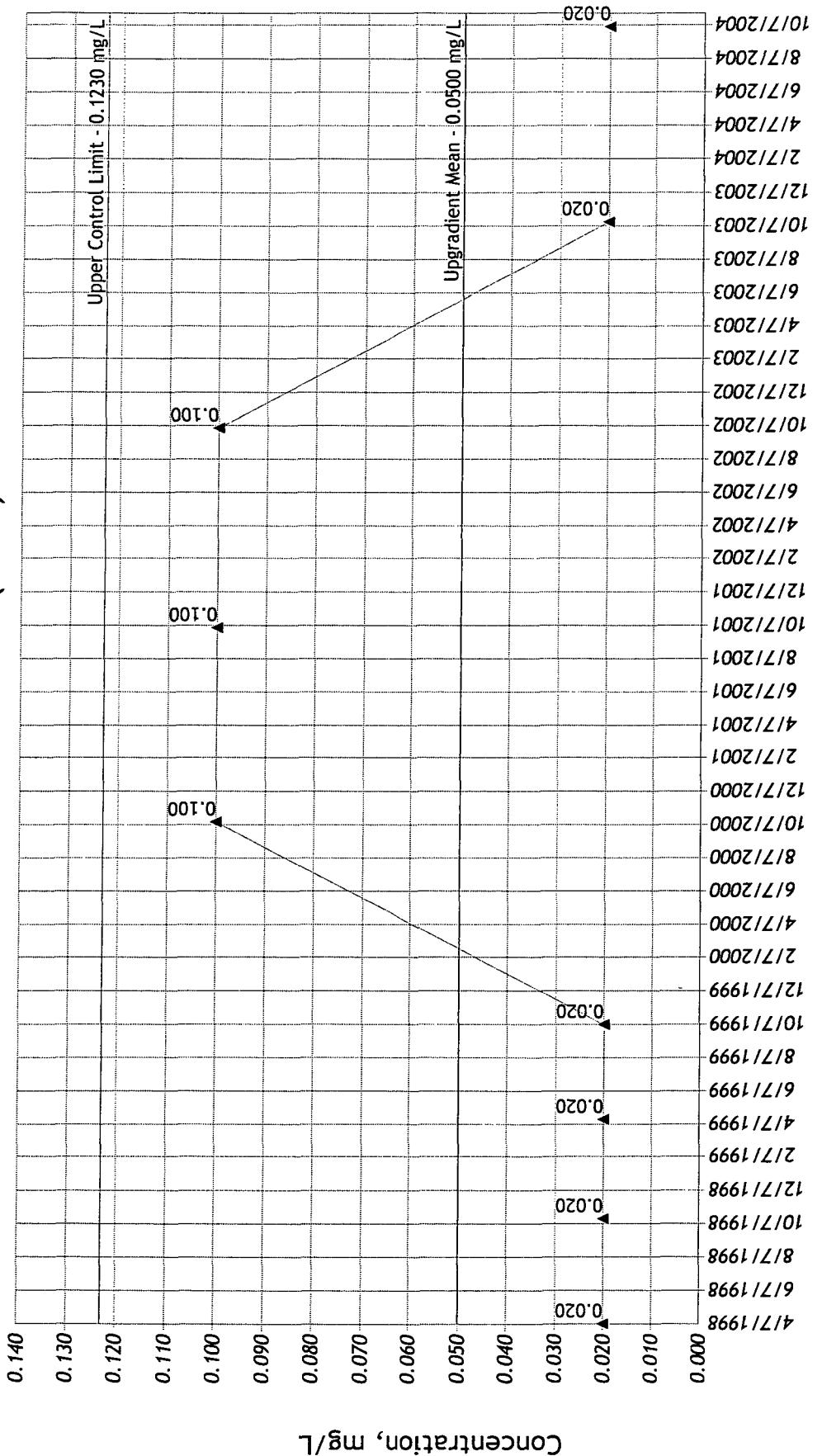
Total Phenols
Council Bluffs Construction and Demolition Landfill
 78-SDP-01-89

04001
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Total Phenols Trends - (MW-11)

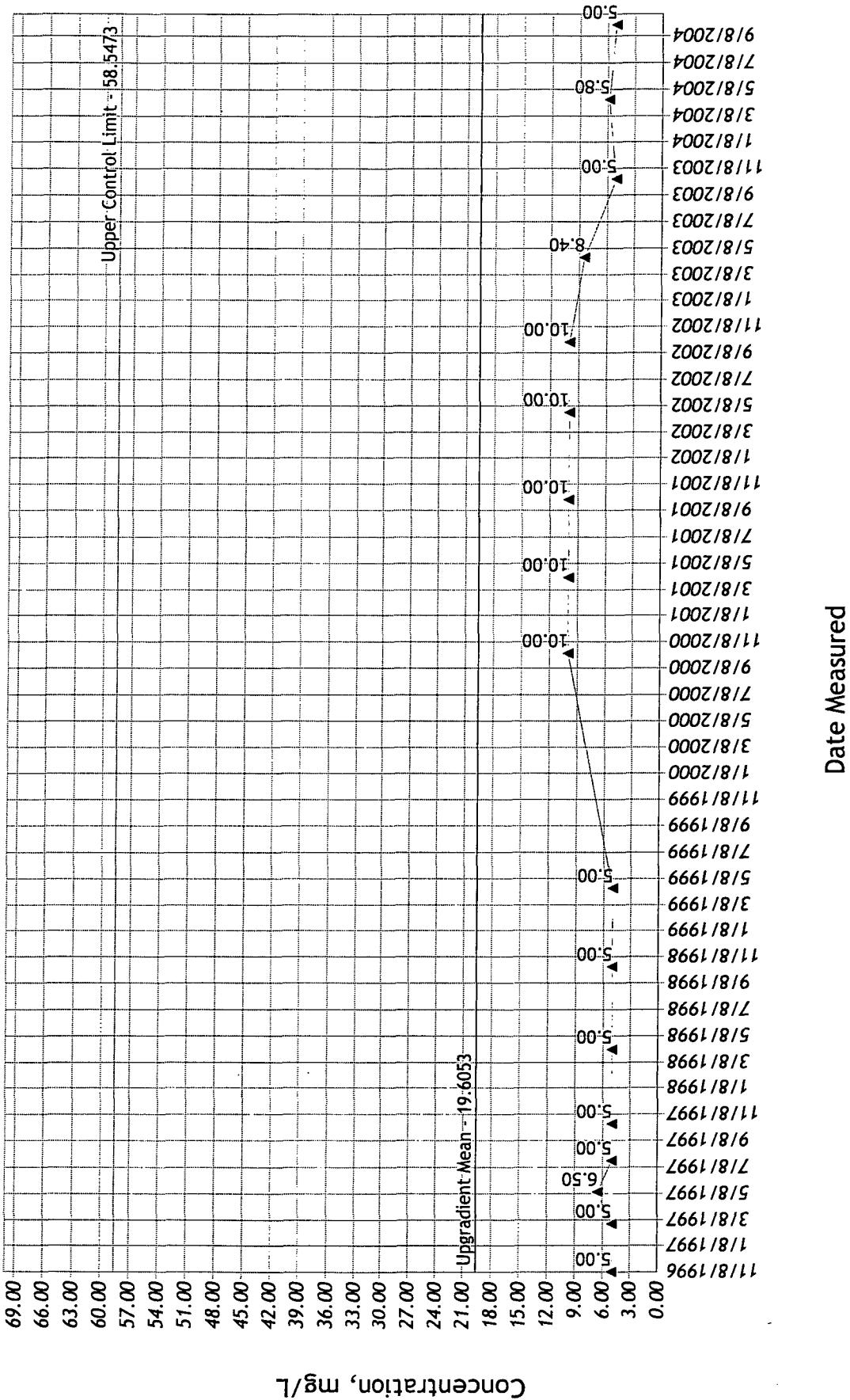


Total Phenols Trends - (MW-2)

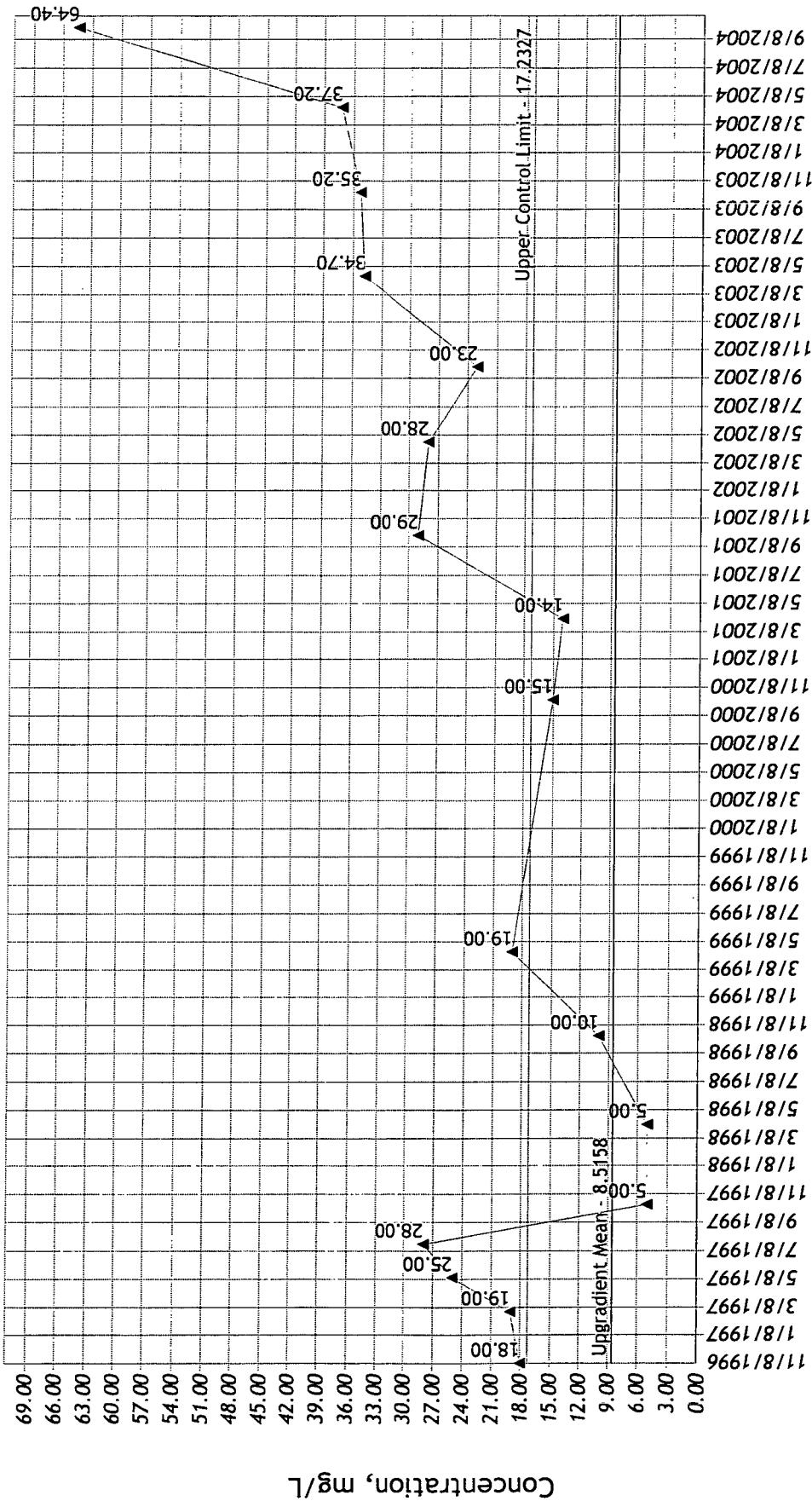


Total Phenols
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

Chemical Oxygen Demand Trends - (MW-10)

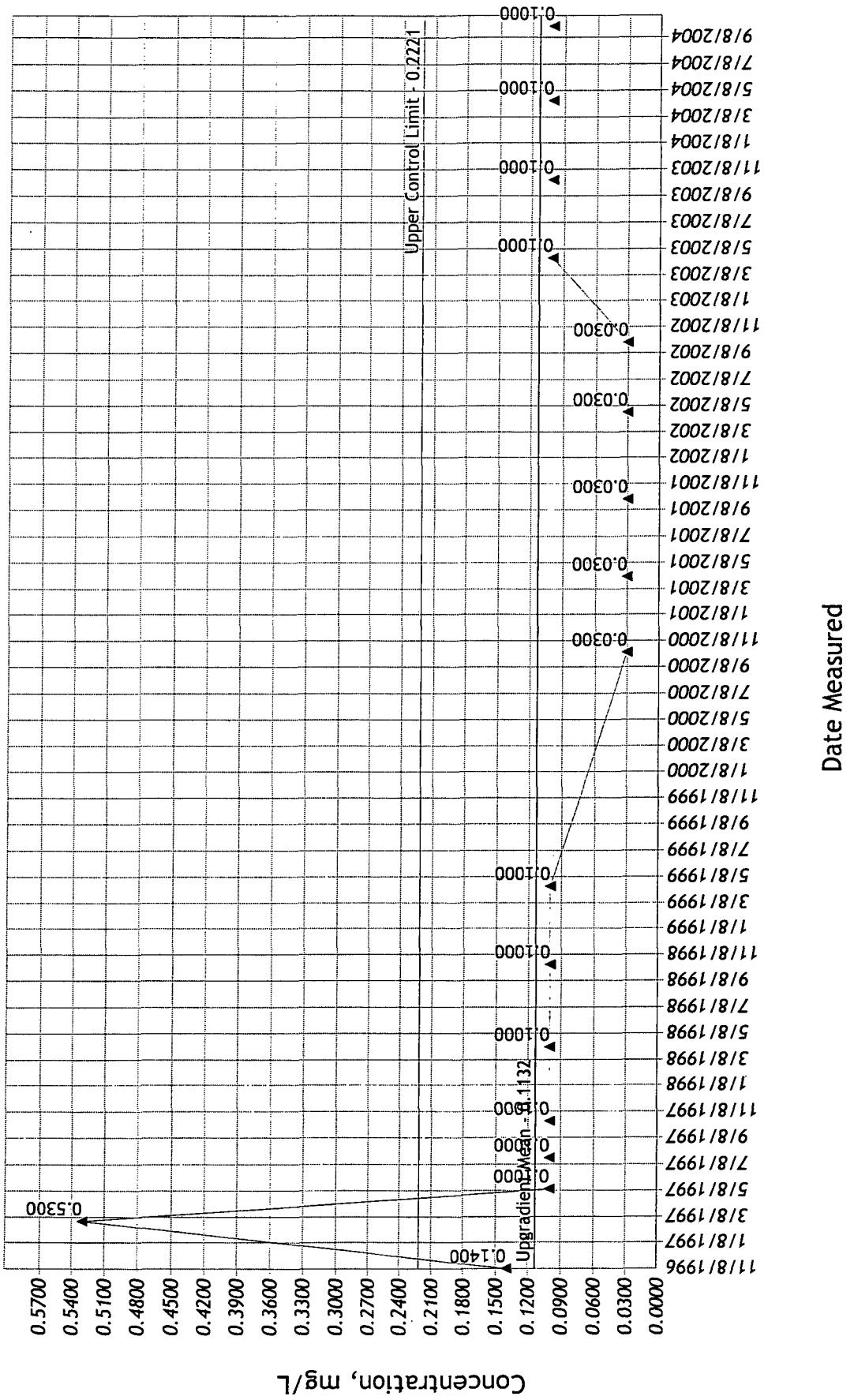


Chloride Trends - (MW-10)



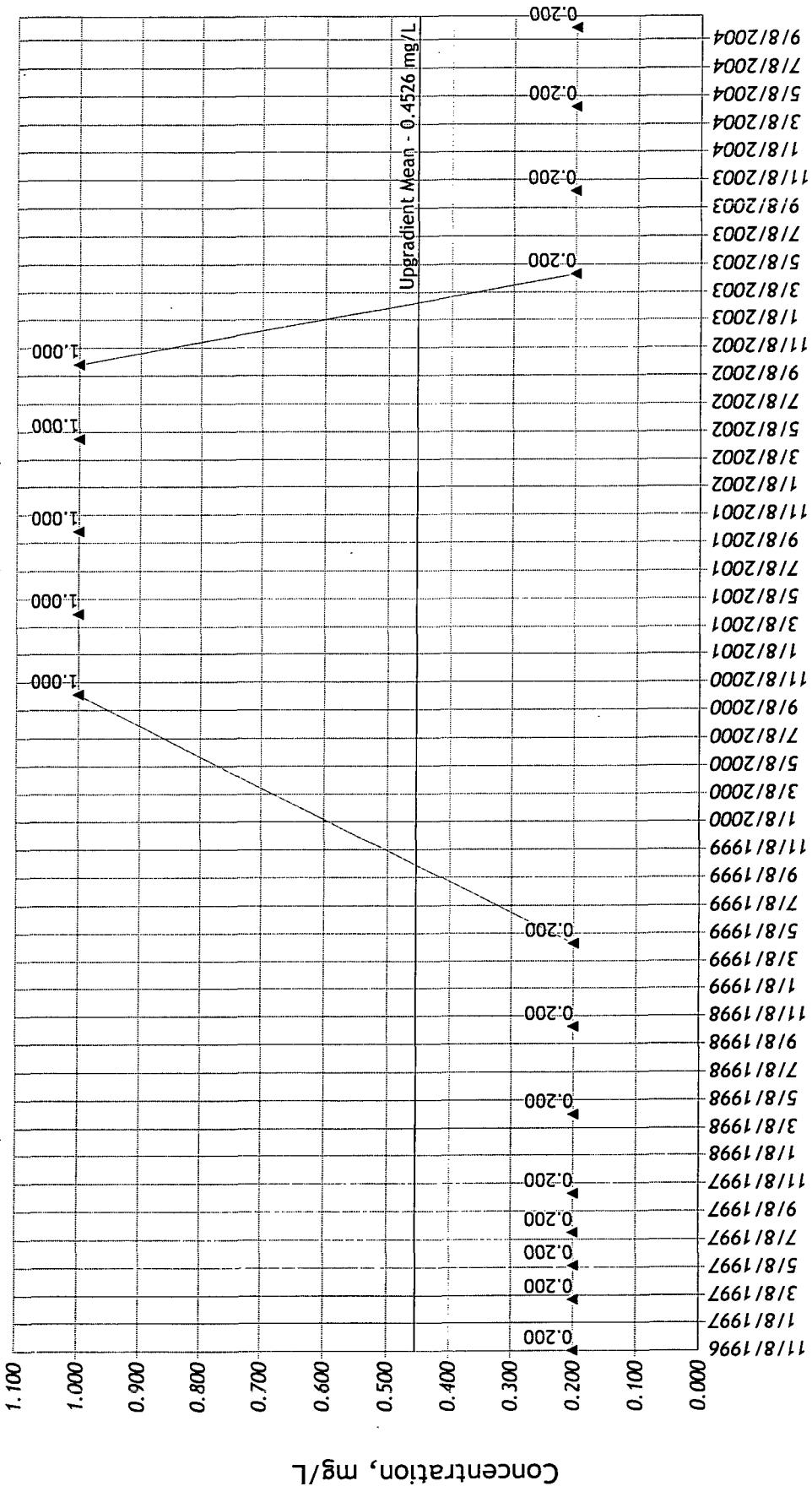
Chloride
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

Iron, Dissolved Trends - (MW-10)



Iron, Dissolved
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

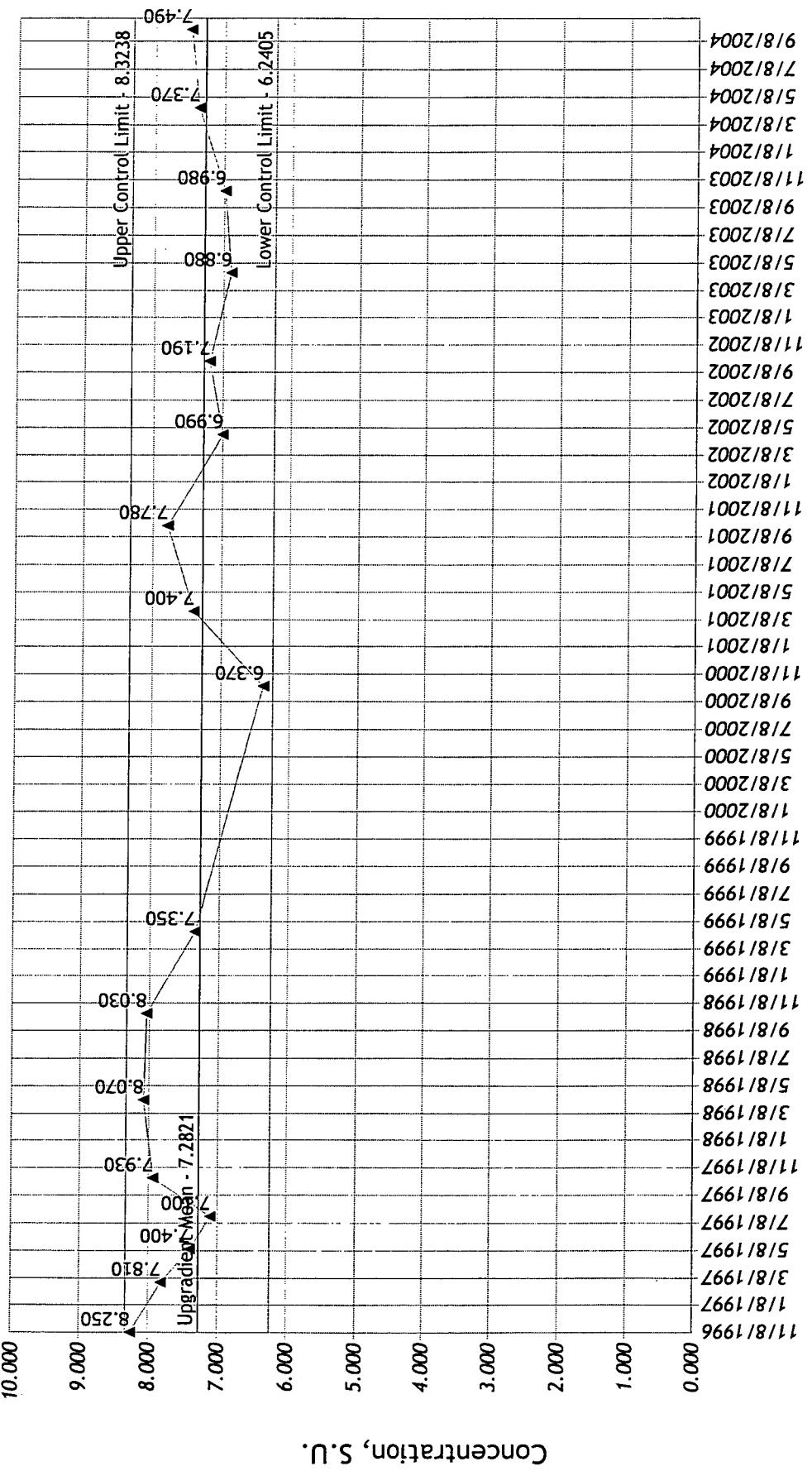
Nitrogen, Ammonia Trends - (MW-10)



Note: The upper control limit is not shown as the standard deviation was not calculated due to consistent parameter non-detect in the up-gradient monitoring point.

Nitrogen, Ammonia
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

pH Trends - (MW-10)



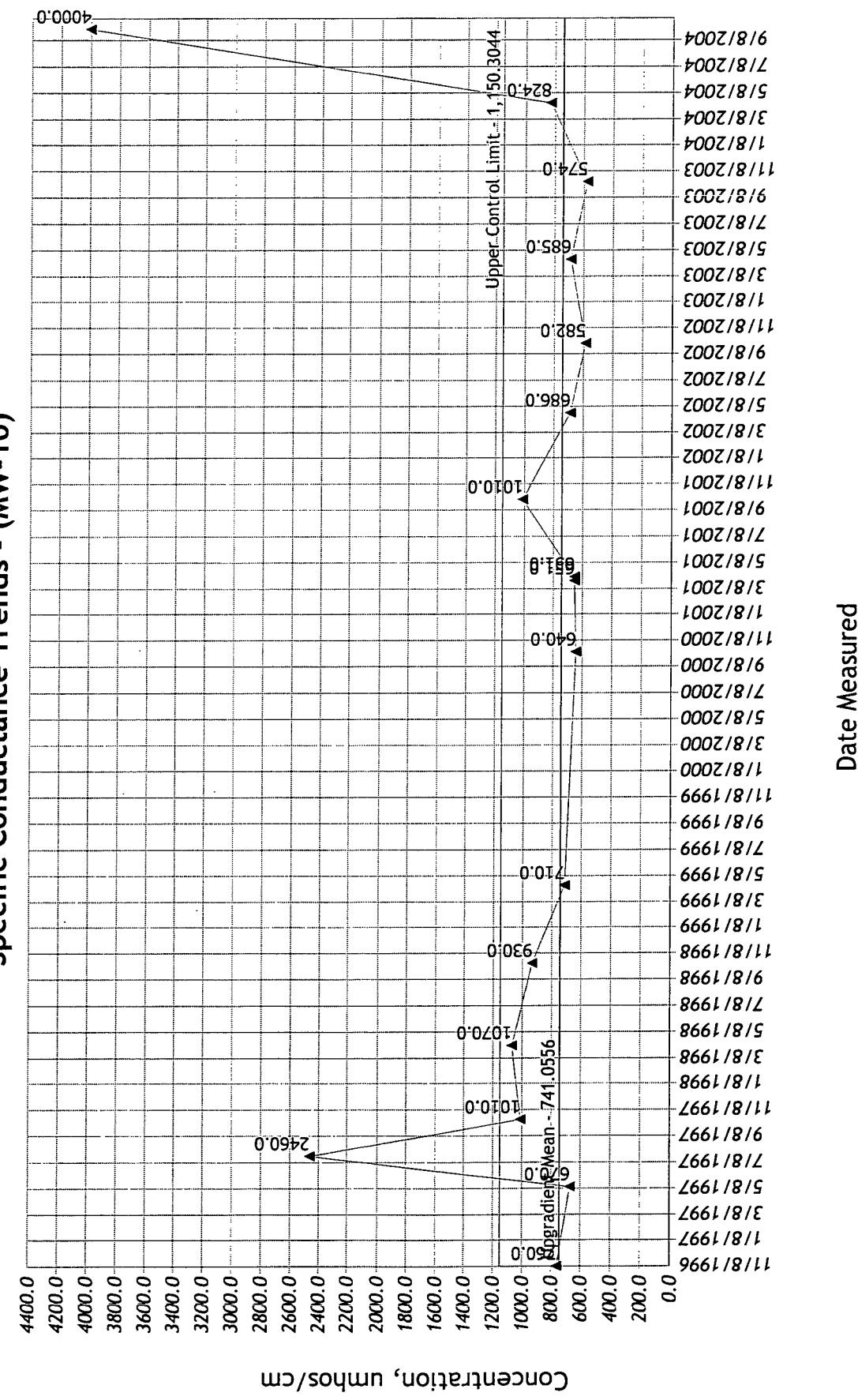
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pH
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

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Specific Conductance Trends - (MW-10)



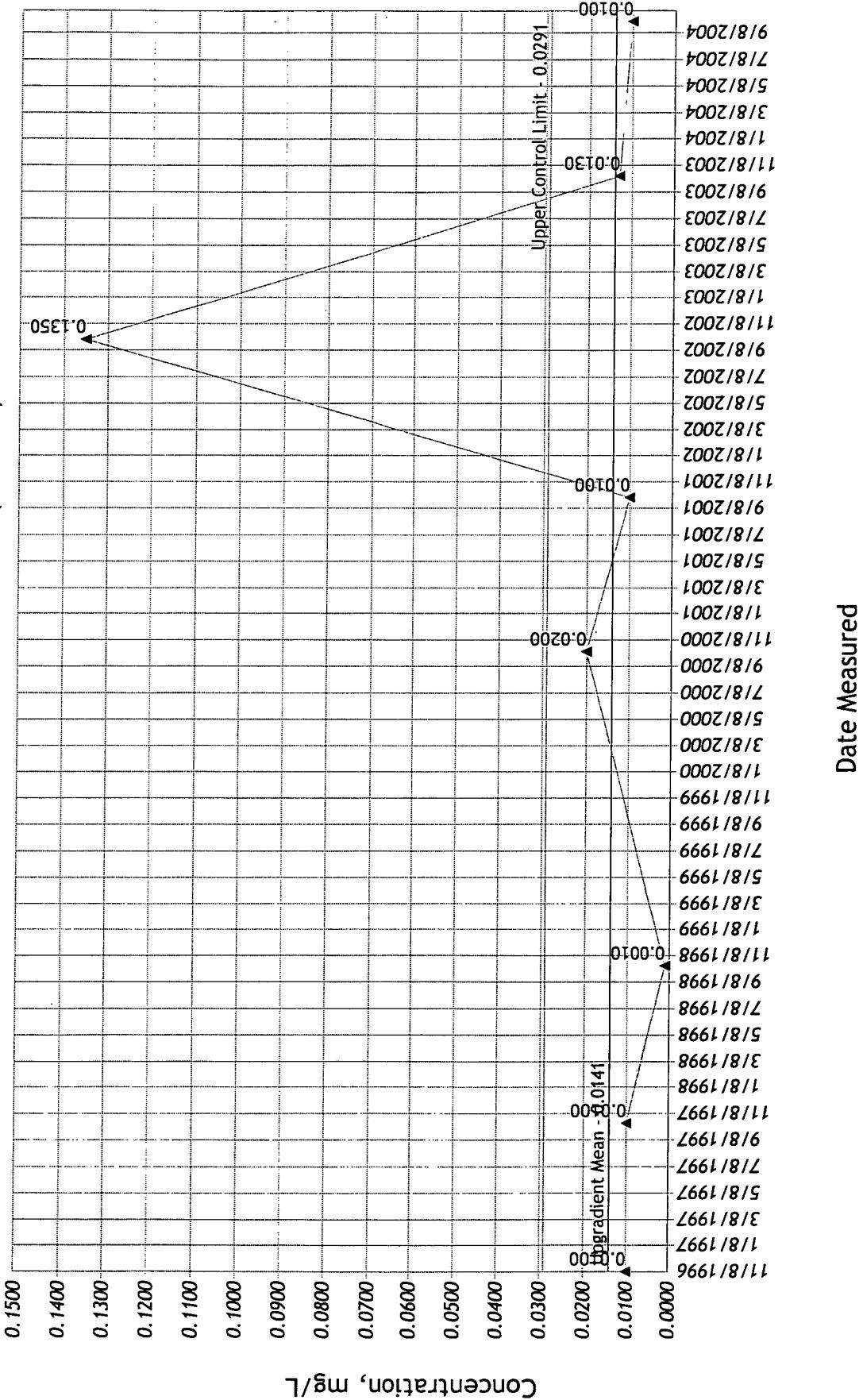
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**Specific Conductance
Council Bluffs Construction and Demolition Landfill**
78-SDP-01-89

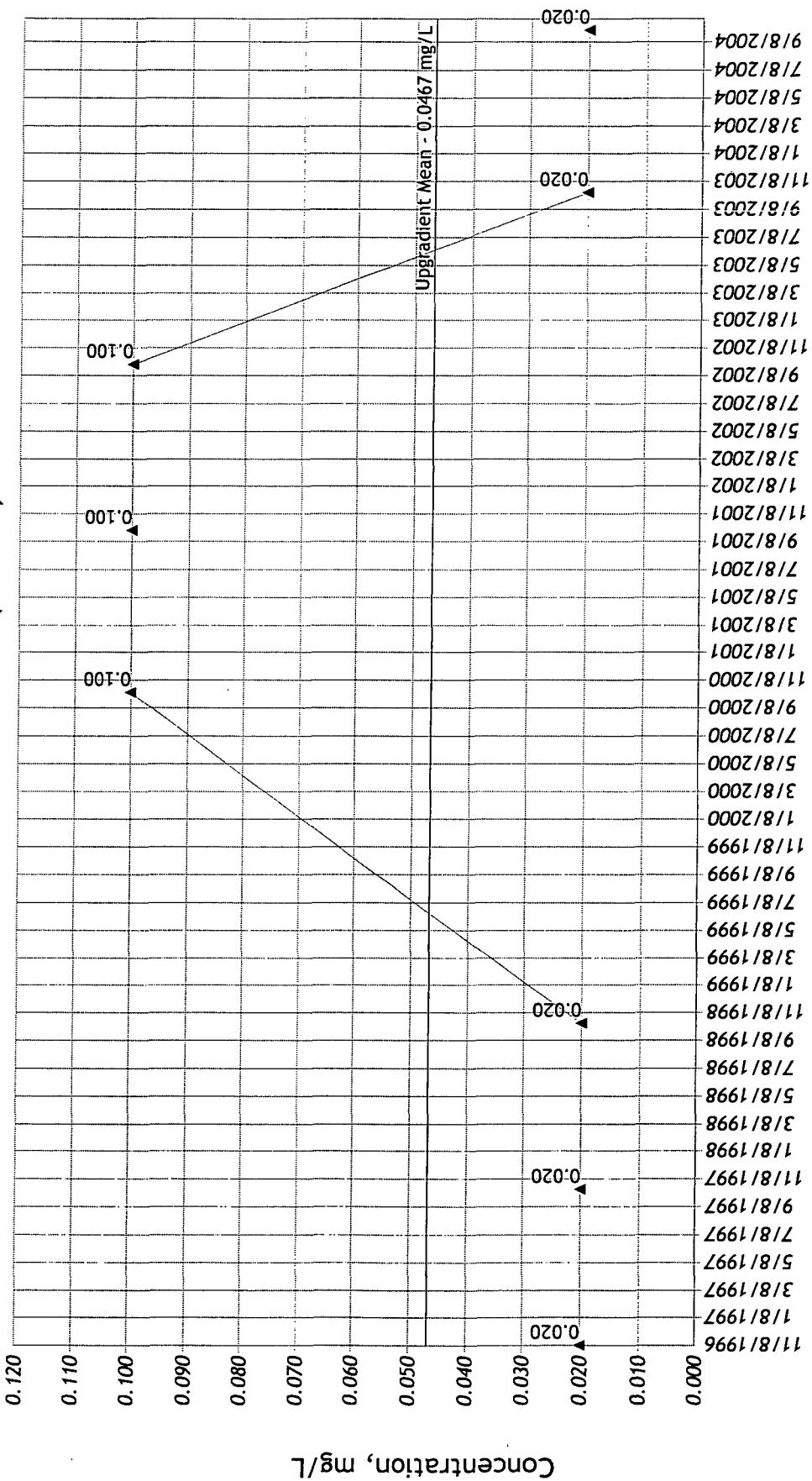
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Total Organic Halogens Trends - (MW-10)



Total Phenols Trends - (MW-10)



Note: The upper control/limit is not shown as the standard deviation was not calculated due to consistent parameter non-detect in the up-gradient monitoring point.

Total Phenols
Council Bluffs Construction and Demolition Landfill
78-SDP-01-89

APPENDIX F
MEASURED LEACHATE LEVELS

Council Bluffs Landfill Leachaide Tank Readings

Date Tank Levels Checked	Tank Level	Date Tank Pumped
12/5/2003	35%	
1/7/2004	40%	
2/11/2004	45%	
3/10/2004	55%	
4/7/2004	75%	
5/5/2004	90%	
6/9/2004	95%	6/16/2004
7/7/2004	20%	
8/11/2004	25%	
9/8/2004	35%	
10/6/04	45%	
11/3/04	50%	